

POLICY ANALYSIS EXERCISE ABSTRACT

REFOCUSING AMERICA'S DRUG CONTROL STRATEGY: AN EVALUATION OF THE OFFICE OF NATIONAL DRUG CONTROL POLICY'S MEASURES OF PERFORMANCE

by

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2. CLIENT AND TOPIC DESCRIPTION

The Office of National Drug Control Policy (ONDCP) is the coordinating government agency tasked with the mission of reducing illegal drug use and its consequences. As required by law, ONDCP must submit an annual strategy to Congress detailing the supply and demand reduction program activities which provide the optimum means to achieve ONDCP's targeted objectives. One of the primary drawbacks to ONDCP's ability to formulate objectives which are realistic, appropriate, and robust is a lack of understanding about the nation's historical drug use patterns — particularly the tremendous increase in cocaine use in the mid 1980's. This paper will evaluate ONDCP's 1997 strategy by examining how effective each of the strategy's goals will likely be in reducing drug use based on an evaluation of these historical trends and the relationship between drug use measures and actual drug use and its consequences.

3. EXECUTIVE SUMMARY

- A. PURPOSE.** The purpose of this report is to use historical data on measures of drug use, availability, and consequences in order to critique ONDCP's ten-year drug control

strategy and guide future measures of performance towards more narrowly defined, appropriate, and meaningful end states.

B. DISCUSSION. As the first long-term, comprehensive, target-specific drug control initiative produced at the national level, the 1997 *Blueprint for a Drug Free America* represents a giant leap forward for America's drug control efforts. This is not to say, however, that it is a complete document.

(1) ONDCP's *Blueprint* suffers from two primary shortcomings:

- (a) **It fails to distinguish between different types of illicit drugs.** Different drugs produce different patterns of use, availability, and consequences. Therefore, objectives and measures should be tailored to specific drugs rather than illicit drugs in general.
- (b) **It fails to identify which of its goals and objectives are most important.** The *Blueprint* is correct in its assessment that strict adherence to all goals is fundamental to completely scourging America of illegal drugs and their consequences. However, a realistic policy in an environment of finite resources must prioritize goals so that the most critical receive the appropriate attention.

(2) By evaluating historical trends for the *Blueprint*'s suggested goal impact measures, this report will serve three major objectives:

- (a) **Describe** which measures are most appropriate for each of three classes of drugs: marijuana, cocaine, and heroin.
- (b) **Prioritize** the *Blueprint*'s goals for each of these drug categories based on an analysis of the potential effectiveness of each goal from a historical perspective.
- (c) **Identify** which measures might be most effective in foreshadowing and preventing future wide-scale drug epidemics based on an analysis of America's crack experience.

C. METHODOLOGY. Each section of this paper examines a different aspect of drug control policy for marijuana, cocaine, and heroin by analyzing historical trends in the use, availability, and consequences of use for each drug. By examining the causal or predictive relationship between each goal's potential measure of performance data (as listed in the *Blueprint*) and actual drug use and consequence statistics, this paper will establish the most important measures on which ONDCP should focus.

- (1) The first chapter will describe the historical connection between youth attitudes towards drug use and availability and actual levels of use among those youth.
- (2) The second chapter will focus on the relationship between trends in illegal drug availability as measured by street prices, drug use, and drug consequences.
- (3) The third chapter will demonstrate the importance of evaluating drug use consequences in particular in order to determine which drugs constitute the gravest danger for America's citizens.

D. CONCLUSIONS. An analysis of the data reveals three very interesting conclusions. Underlying these, however, is the realization that **ONDCP must find new means of measuring drug use among two populations who suffer disproportionately from drug use consequences: chronic drug users and poor urban minorities.** The discrepancy between drug use rates in the general population and escalating drug use consequences, particularly with cocaine and heroin, seems to indicate that these individuals are largely undercounted by the most prevalent drug use surveys (MTF and NHSDA).

- (1) First, **attitudes about marijuana strongly influence marijuana use rates among youth, but this causal relationship does not appear to exist for cocaine or heroin.**
- (2) Second, while changes in drug prices do not seem to affect the total number of drug users, **there appears to be a strong relationship between price and drug-induced emergency room episodes for both cocaine and heroin.**
- (3) Third, and perhaps most importantly, drug use consequence measures indicate that America's crack epidemic is far from over. While cocaine undoubtedly produces the most severe consequences of any illicit drug, decreases in the price for heroin has also generated an alarming increase in emergency-room episodes as well. **These trends seem likely continue unless supply-reduction strategies are successful in increasing the street price of illegal drugs in America.**

4. PRIMARY SOURCES

A. SAMHSA National Household Survey on Drug Abuse: NHSDA is a random survey of U.S. households (those citizens who own property) conducted annually by the Department of Health and Human Services. It measures drug-specific use rates of demographics of the population by age, race, gender, education, employment, and population density, as well as examining initiation rates. NHSDA is probably the best available source of overall general-population drug use statistics. Its primary downfall is that its survey method fails to account for drug use among incarcerated, institutionalized, or vagrant individuals - populations where drug use rates tend to be well above the national norm.

- B. Monitoring the Future Study:** MTF, conducted by the University of Michigan, is the primary source of information concerning drug use and attitudes among the nation's middle and high school students. It offers a very comprehensive examination of drug-specific use rates among 8th, 10th, and 12th grade students. It also measures students' attitudes towards illegal drugs use. MTF's primary shortcoming is the fact that it does not account for youth who have dropped out of school, and thus may undercount the actual number of illegal drug users.
- C. Drug Abuse Warning Network:** DAWN is a data bank kept by the Substance Abuse and Mental Health Services Administration (SAMHSA) under the Department of Health and Human Services. DAWN estimates the number of annual national drug-induced emergency room visits by compiling data from 770 hospitals in America's 21-largest metropolitan districts. Both city-level and national information is kept on emergency room episodes and deaths by drug type, age, race, sex, and method of administration.
- D. System To Retrieve Information from Drug Evidence (STRIDE) Data:** STRIDE contains test results (amount and purity) for drug purchases made by undercover DEA agents and other federal and state agents. Using this data, Abt Associates Inc. has averaged this data and converted all the prices to 1997 dollars for pure unit of the drug (purity is not considered in the price for marijuana). The prices listed below are for "standard" retail purchase amounts.

**REFOCUSING AMERICA'S DRUG CONTROL STRATEGY:
AN EVALUATION OF THE OFFICE OF NATIONAL DRUG CONTROL POLICY'S
PERFORMANCE MEASURES OF EFFECTIVENESS**

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EXECUTIVE SUMMARY

Performance Measures of Effectiveness is one of the most important documents produced in the history of the Office of National Drug Control Policy. For the first time since the organization's conception, ONDCP has responded to the public's call for increased accountability and improved, measurable performance for national drug control efforts. No one questions that together, the Blueprint's five counter-drug goals constitute a necessary and effective strategy for eliminating the evil consequences that illegal drugs have brought on our society. ONDCP's *Blueprint* represents an extremely comprehensive examination of the types of interventions that must be made; however, there are two principle shortcomings of *Performance Measures* as a useful performance-measuring document:

- **First, *Performance Measures* does not distinguish between different types of drugs.** No two drugs are exactly similar in their patterns of use, availability, or consequences. Even though many of those who use illicit substances are poly-drug users, general drug use measures fail to capture these differences. Therefore, ONDCP should assign different drugs different objective end-states. This report will help demonstrate which measures are the most effective indicators and predictors for each of three major drugs – marijuana, cocaine, and heroin.
- **Second, *Performance Measures* fails to prioritize any of its stated goals or objectives.** While there may be strong political pressures to give equal weight to all of ONDCP's goals, some are certainly more critical than others. In an environment of finite resources, ONDCP must recognize that some objectives may need to be sacrificed, at least temporarily, in pursuit of others. Through a historical analysis of drug measures, this report will help to identify which aspects of illegal drug use pose the gravest threat to America.

The real danger in neglecting to distinguish between drug types and in failing to prioritize goals is that the strategy as a whole may be viewed as a failure should ONDCP fall short in any one of its target measures. This is particularly important considering the scrutiny with which ONDCP's measures will be viewed by some already-critical members of Congress. Therefore, it is incumbent that ONDCP take the following measures:

- **Describe** which measures are most appropriate for each drug. This report will focus on marijuana, cocaine, and heroin, the three most prevalent illegal drugs in America today. Marijuana use, for example, is particularly susceptible to youth attitudes. Youth attitudes do little to impact cocaine or heroin use, however, as fluctuations in the consequences of these drugs can be largely explained by changes in their street prices.
- **Prioritize *Performance Measure's* goals** for each of these drug categories based on an analysis of the potential effectiveness of each goal from a historical perspective. For example, a 50% reduction in youth drug use should certainly be regarded as a victory

even if the average age of initiation does not increase, yet *Performance Measures* assigns no such priority.

- **Identify** which measures might be most effective in foreshadowing and preventing future wide-scale drug epidemics based on an analysis of America's crack experience. In fact, an analysis of drug-use consequence trends for cocaine shows that the crack epidemic in the United States is far from being over. Additionally, the country appears highly susceptible to another heroin epidemic. Cocaine in the late 1980's permanently changed the face of America's inner cities and further outbreaks along these epidemic proportions could cause unprecedented damage. Therefore, preventing further epidemics should be ONDCP's number one priority.

Performance Measures of Effectiveness constitutes a giant leap towards producing a coordinated and effective federal counterdrug strategy, but it can be improved even further. Time (and Congress) will certainly produce many more challenges for ONDCP to meet. But for now, instituting a more coherent and meaningful performance measurement system would represent a momentous step in the right direction. More importantly, it is one which neither ONDCP nor America can afford not to take.

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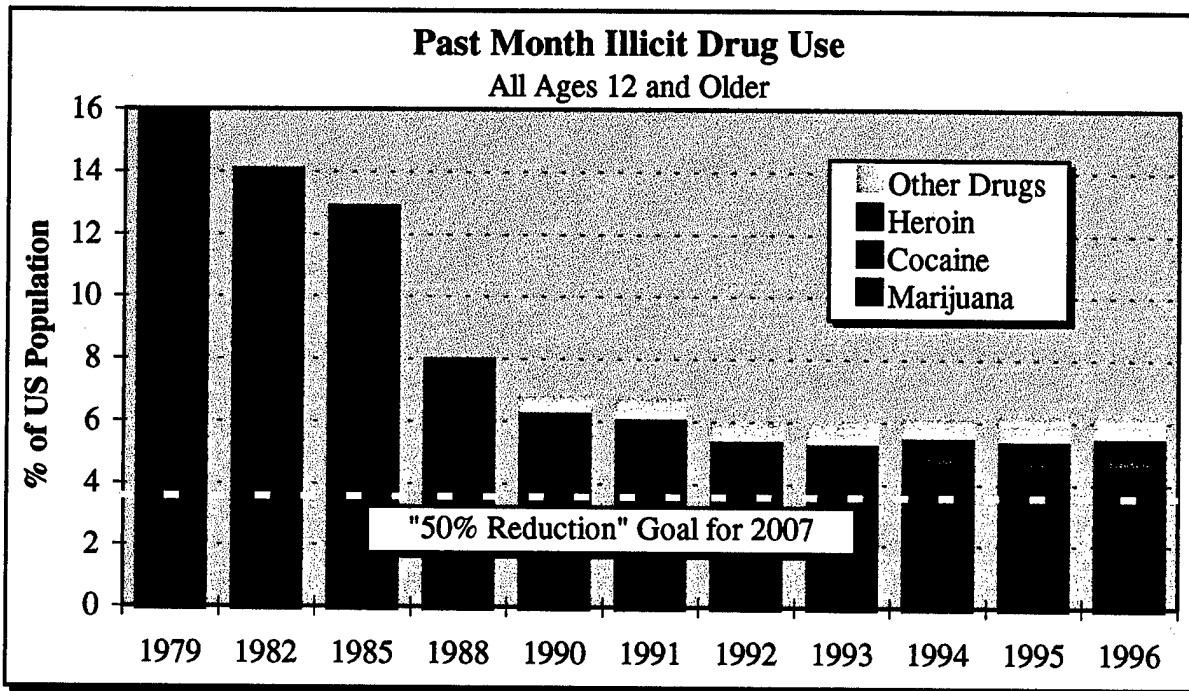
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INTRODUCTION

Illicit drug use has stabilized near its lowest level in over twenty years; approximately 6% of the general population has used an illegal drug in the past month. The Office of National Drug Control Policy has recently released *The National Drug Control Strategy, 1998* – an ambitious, multi-agency strategy to further reduce drug use by 50% over the next ten years. America has managed to escape from under the shadow of the crack epidemic of the late 1980's, and much of the current-user population could be reduced simply by cracking down on marijuana use by America's youth. The "war on drugs" couldn't look more promising, right?

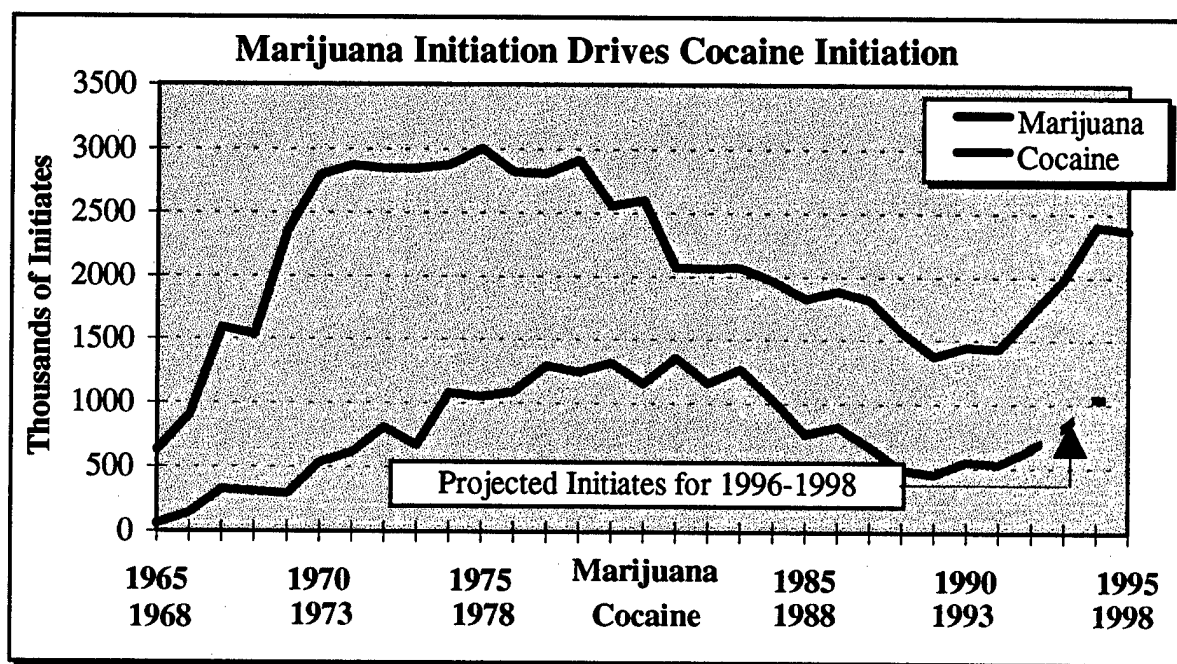


Data Source: 1996 National Household Survey on Drug Abuse, SAMHSA

Not quite. Cocaine and heroin, while contributing to less than 10% of all illegal drug use, account for over 40% of all drug episodes requiring medical attention and well over 50% of drug-related criminal activity. Unfortunately, while the number of drug users seems to have stabilized, the consequences of this illegal drug use continue to soar at an alarming rate: over the past five years, emergency room episodes have increased over 40% for cocaine and nearly 50% for heroin.

Part of the reason for this can probably be attributed to the fact that both cocaine and heroin are cheaper than ever to buy – fueling chronic users’ addictions and increasing the dosages they are capable of purchasing.

Furthermore, marijuana initiation and past-month use among youth are up substantially from their historical low points of the early 1990’s. Not only are marijuana street prices near their lowest point in ten years, but national emergency room marijuana episodes topped 50,000 in 1996, more than triple the 1991 number. The situation is made even more grim by the fact that marijuana initiation seems to act as a “gateway” to cocaine initiation. That is, the number of marijuana initiates in any one year strongly predicts the number of cocaine initiates three years later (although this causal connection does not seem as strong for actual use rates of the drugs). For a complete analysis of the statistical analysis behind the “gateway” theory, see Appendix A.



Data Source: 1996 National Household Survey on Drug Abuse, SAMHSA

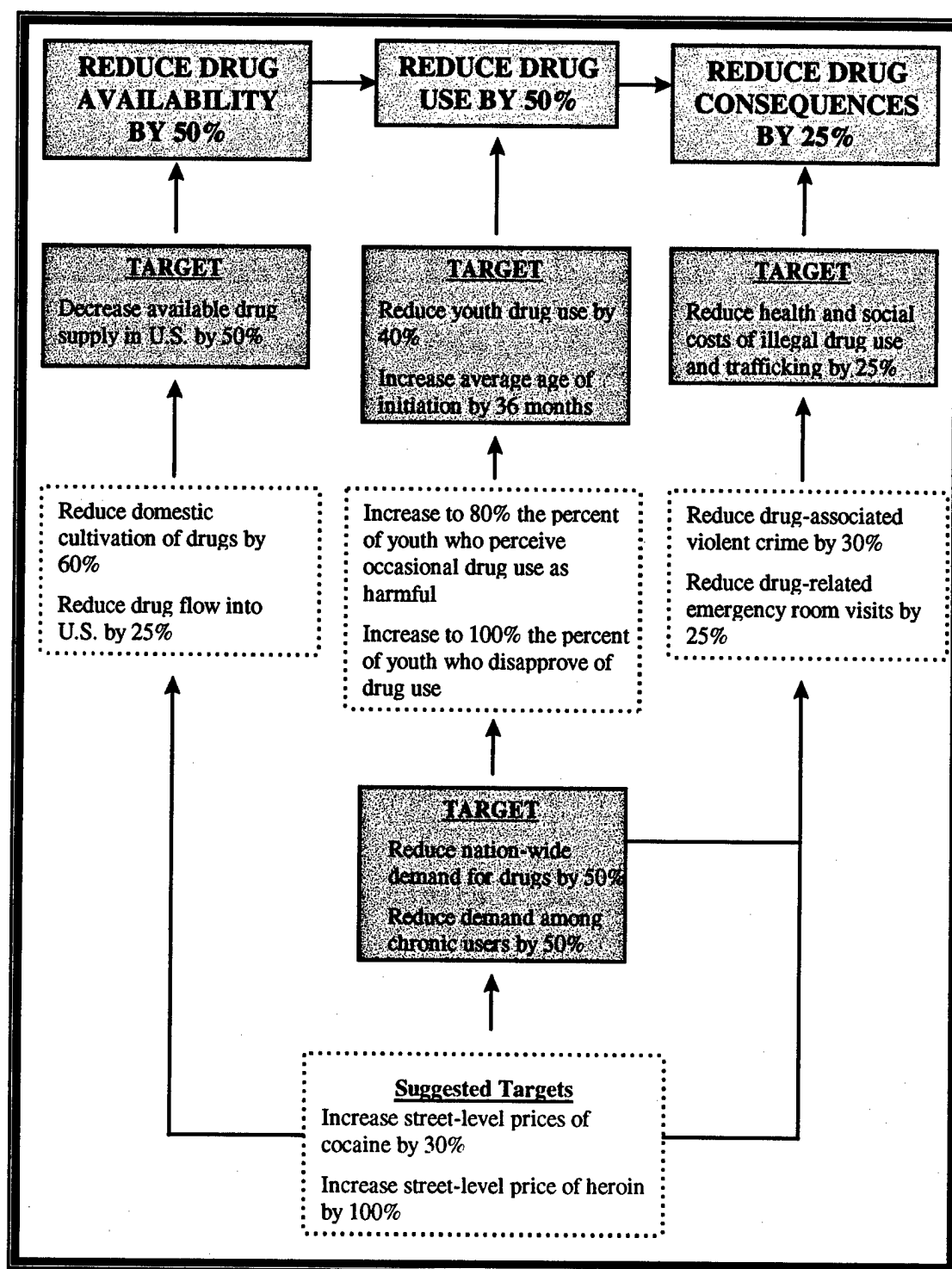
ONDCP's *Performance Measures of Effectiveness* attempts to reverse these alarming trends by focusing on using measures of performance to monitor progress towards five major

goals for the next decade: (1) Educating youth to reject illegal drugs, (2) Reducing use and drug-related crime by decreasing domestic drug availability, (3) Reducing use and drug-related health consequences by decreasing domestic drug demand, (4) Shielding America from drug trafficking from abroad, and (5) Breaking foreign and domestic sources of supply for illegal drugs. This report will focus only on the *first three* of these goals and their measures, since accomplishing the objectives associated with these goals would render goals four and five redundant or superfluous.

Naturally, any analysis of ONDCP's *Performance Measures* is bound to be constrained by the lack of meaningful historical data on the potential effectiveness of specific objectives, particularly those which are not directly connected to drug use, availability, or consequences. This paper is not exception. However, in cases where such information does exist, evaluating the relationship between these objectives and ONDCP's overall goal of minimizing drug use, illegal drug availability, and the associated consequences of drug use for society is a useful means of assigning priority to ONDCP's impact targets. The chart on the following page illustrates the linkage between the goal impact targets analyzed in this report, their associated objectives, and the three principle *Blueprint* goals listed above.

Finally, there is one critical assumption upon which this analysis of ONDCP's *Performance Measures of Effectiveness* is based: **different drugs produce different use patterns with varying levels of consequences.** Not all impact targets or measures will be equally meaningful for all illegal drugs, and ONDCP's impact targets and should adjusted accordingly. By evaluating the appropriateness of *Performance Measures'* standards for impacting levels of use and consequences for each drug, ONDCP can produce a more effective and efficient counter-drug strategy for the future.

**PERFORMANCE MEASURES OF EFFECTIVENESS
SUMMARY OF GOALS EVALUATED**



CHAPTER I

YOUTH ATTITUDES AND DRUG USE: EVALUATING DEMAND REDUCTION STRATEGIES

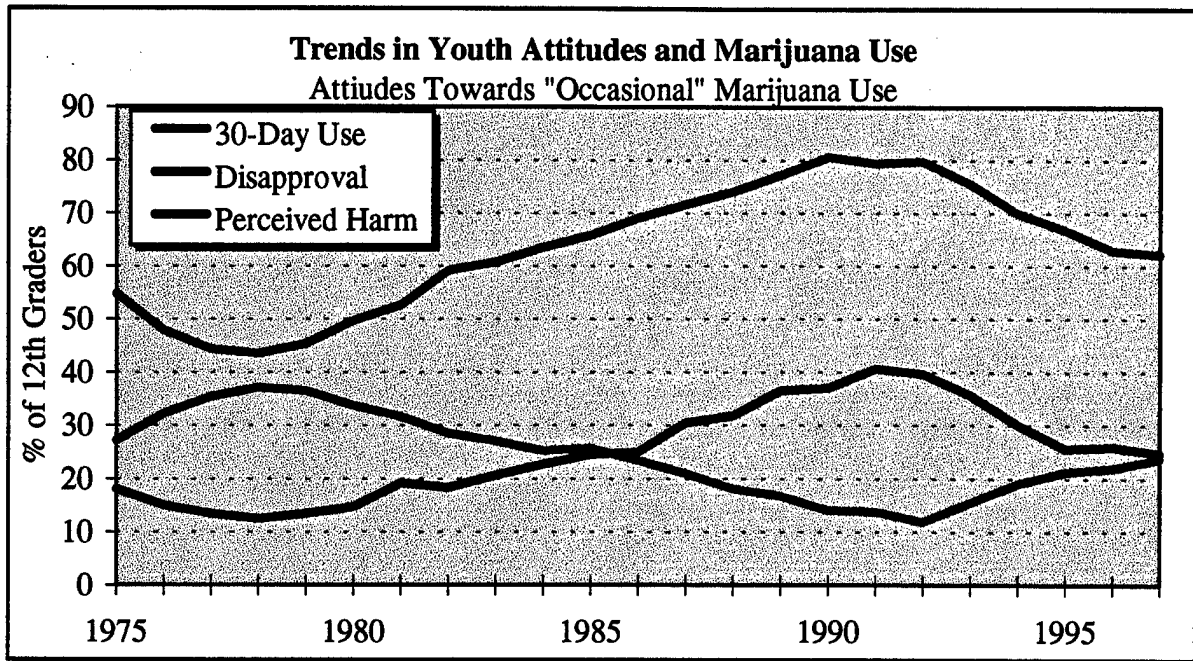
The number one priority of ONDCP's *1998 National Drug Control Strategy* is "to empower youth to reject illegal drugs and substance abuse." This message has been reinforced in statements before Congress by the Director and, more importantly, by ONDCP's ambitious \$195 million per year anti-drug media campaign targeting America's youth. Two impact targets for 2007 focus directly on youth illegal drug use:

- (1) Increasing the average age of first-time drug use by 36 months from the 1996 level
- (2) Reducing the prevalence of any illicit drug use among youth by 50% from 1996 levels

Performance Measures of Effectiveness also lists 25 targets and measures that will contribute to accomplishing these targets, but all of them seem to support the primary objectives of increasing youth perceptions of risk and disapproval associated with illicit drug use. This chapter of the report will focus on the appropriateness of pursuing these objectives and their link to the above impact targets by answering the following questions:

- Is ONDCP correct in its hypothesis that changing youth attitudes can impact drug use levels?
- Are youth attitudes important in influencing youth use rates for *all* illegal drugs?
- Is the connection between initiation age and drug use as strong as *Performance Measures* claims, or is there a better determinant of actual youth use rates?

That there is some relationship between youth attitudes towards drug use and actual drug use itself is clear. The chart on the following page demonstrates that youth marijuana use tends to change in the opposite direction as the percentage of youths who disapprove of occasional marijuana use or perceive such use as being risky.

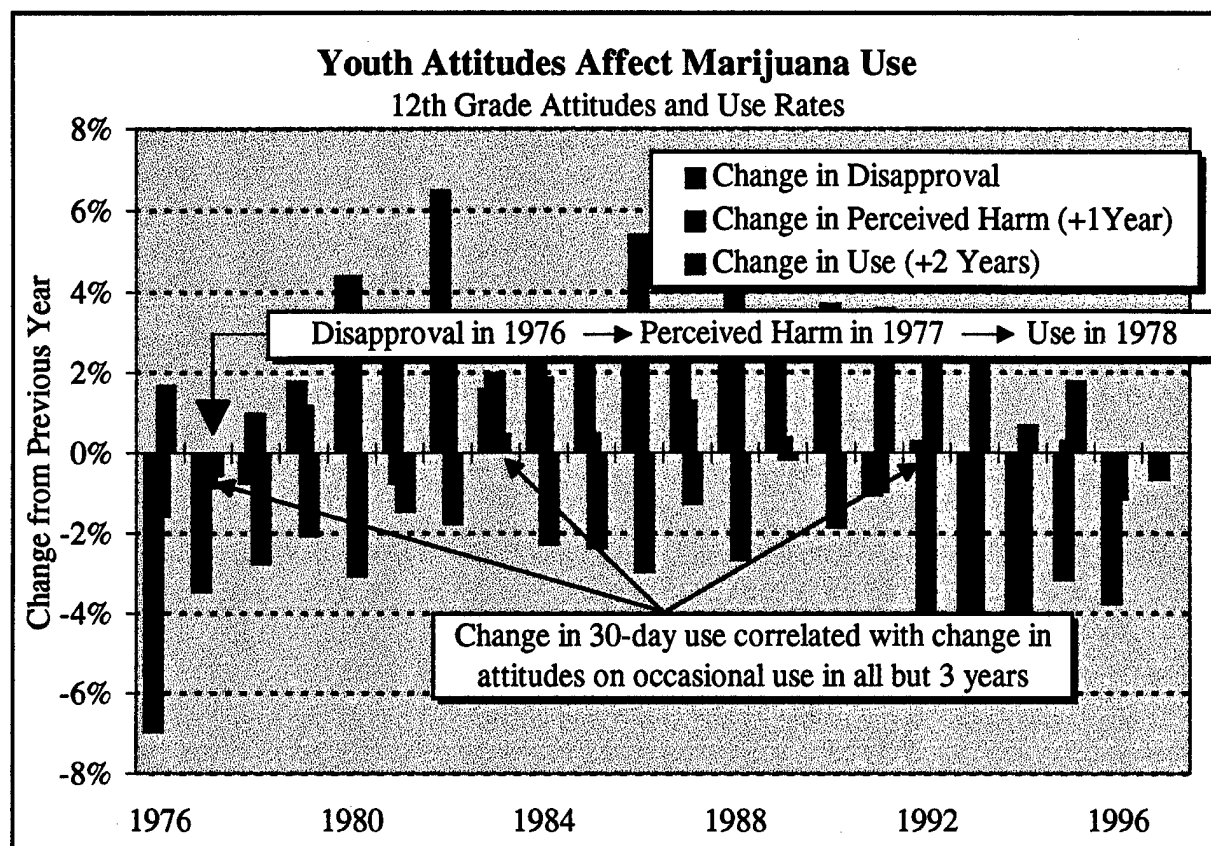


Source: 1997 Monitoring the Future Survey, University of Michigan

Establishing an actual *causal* relationship between attitudes and behaviors, however, requires some theorizing about the potential lag time between a change in attitude and a change in behavior. ONDCP, for example, assumes that attitudes take one year to be internalized before they can affect either other attitudes or behaviors. Thus, we would expect that an increase in the percentage of youths who disapprove of occasional drug use would result in an increase in youths' perception of "great risk or harm" for occasional drug use for the following year, and that youth drug use itself would in turn decrease the year after that. By running a two-step regression on each of these factors for marijuana, we find that this is exactly the case:

- For every 1% *increase* in disapproval of occasional marijuana use, the number of 12th graders perceiving occasional marijuana use as "very risky or harmful" *increases* by 0.7% the next year.
- For every 1% *increase* in perceived harm, the number of 12th graders who use marijuana on a monthly (or more frequent) basis *decreases* by 1.1% the next year.
- Thus, for every 1% *increase* in disapproval, we expect a 0.79% *decrease* in use two years later.

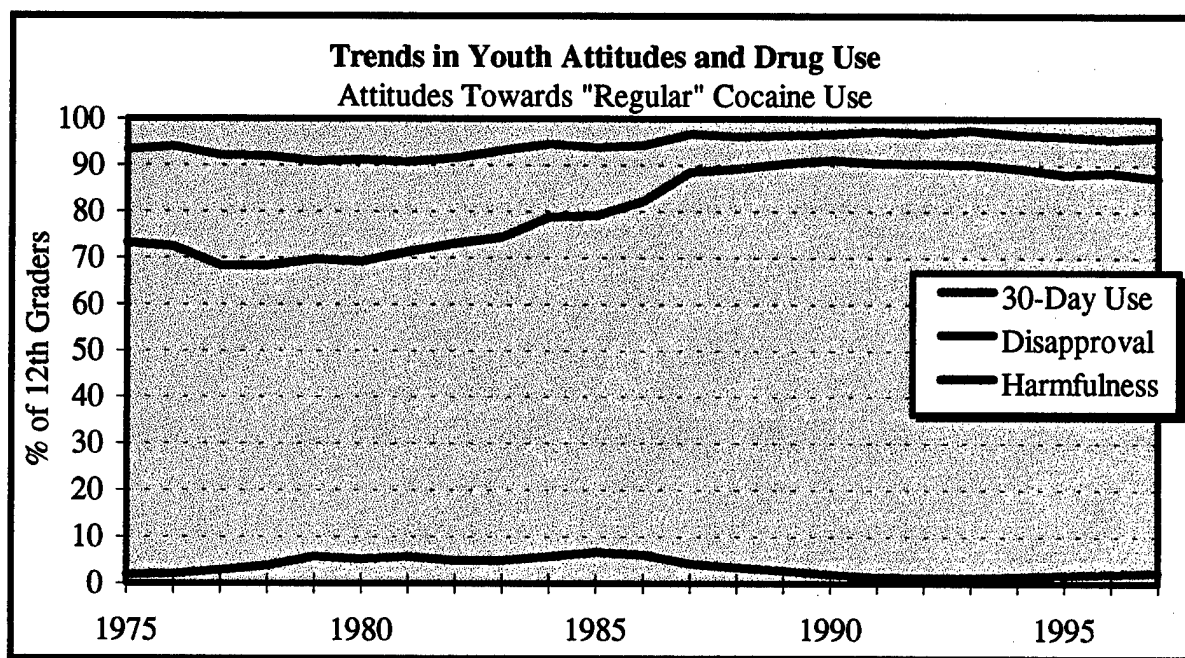
Appendix B contains a complete statistical analysis of this relationship, but it is even more effectively communicated by the visual below:



Data Source: 1997 Monitoring The Future Study, University of Michigan

Increasing the number of youths who disapprove of marijuana use seems to directly impact the number of youths who actually use the drug. Therefore, if ONDCP met *Performance Measures* target of increasing the number of youth who disapprove of illegal marijuana use to 95% (up from the 1997 level of 62%), we could expect to all but eradicate marijuana use by 2007 since the equations on page 6 predict that use would fall to near-zero levels. Interestingly, this would occur even though the percentage of 12th graders who viewed occasional marijuana use as “very risky” would only be at approximately 62 percent – far below ONDCP’s target of 80%. (Of course, such a regression is unlikely be significantly accurate at such high levels of disapproval).

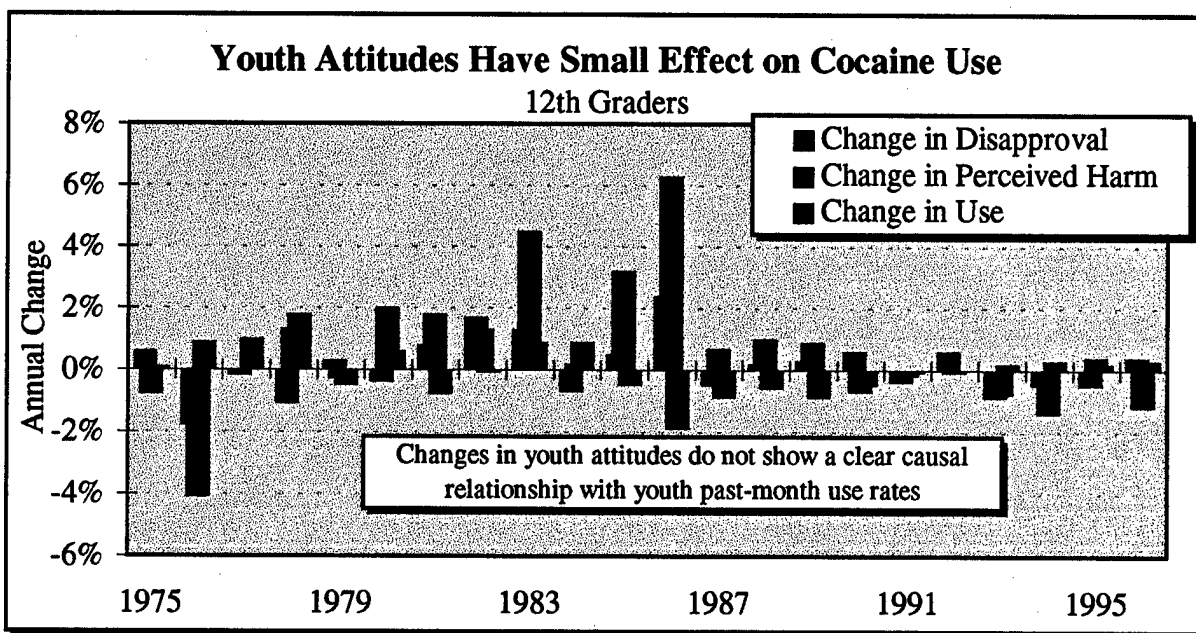
However, *Performance Measures* fails to distinguish exactly which drugs will be targeted; they refer only to “use of illicit drugs” in general. This presents two problems. First, there are no available measures for attitudes on illegal drug use in general – the *Monitoring the Future Study* lists attitudes only in reference to specific drugs, such as marijuana or cocaine. Second, it may be unrealistic to propose that youths who perceive that the occasional use of marijuana is “very risky” could ever top 80 percent given the fact that the highest percentage ever reported was 40.6 percent in 1991, or that 100 percent of 12th graders could ever disapprove of illegal use of *any* illicit substance. Third, the connection between youth attitudes on drugs *other than marijuana* and use levels for those drugs is not at all clear. One reason for this phenomenon might be that far more youths use marijuana than all other drugs combined. Thus, large variations in attitudes for these other drugs might yield barely noticeable changes in use patterns, as this figure shows.



Data Source: 1997 Monitoring the Future Study, University of Michigan

An even more basic explanation, however, might be that attitudes towards these other drugs simply do not play as large a role in determining usage patterns as attitudes towards

marijuana do. In the case of cocaine, for example, both disapproval and perceived harm rates have been higher than the *Performance Measures* targets since 1985, but there does not seem to be the same clear relationship between these attitudes and 12th grade cocaine use, at least not with the same lag-time as that seen in marijuana attitudes and use rates. Although we would expect the same one-year “internalization period” for cocaine, statistical regression confirms that this is not the case: the only statistically significant relationship (one with greater than 95% confidence) that exists between youth disapproval of cocaine use and actual use rates occurs when the two are regressed in the *same* year, and this correlation is not nearly as strong as the one for marijuana (see Appendix B). While increasing youth disapproval and perceptions of harm for marijuana will likely produce reductions in such use, one should not infer that changing youth attitudes about other drugs will necessarily impact their use in the same way or with equal effectiveness.

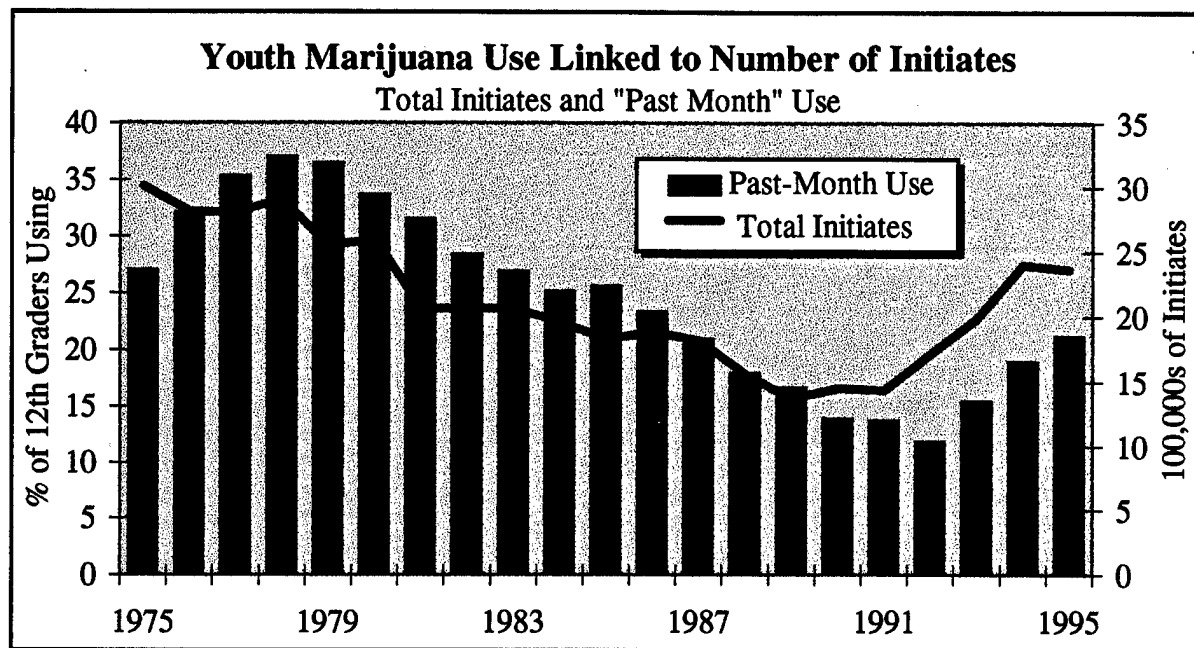


Data Source: 1997 Monitoring the Future Study, University of Michigan

Finally, we need to examine ONDCP’s second impact target: the focus on increasing the average age of first-time illegal drug use by three years. *Performance Measures* claims that doing

so will mean that more youths will make it to 21 years-old before having experimented with an illegal substance, and that their likelihood of using drugs after this point will be greatly reduced. Although there seems to be a reasonable logic behind this statement, there is no empirical evidence showing a correlation between high average ages of first drug use and either the total number of initiates or actual use rates in any given year. While Appendix A demonstrates a strong causal relationship between marijuana initiation and a higher likelihood of progression to harder drugs later in life, the role of age in this process is statistically unclear. *Performance Measures of Effectiveness* cites that the only logic behind raising the average age of initiation above the "20-and-older safety-zone" is that "the mean age of first-time marijuana use was over 20 years in only two years....: 1967 and 1986." In 1986, though, total marijuana initiation was lower than any previous year since 1968. Furthermore, the years with the highest average cocaine initiation ages are also those in which cocaine use itself was the highest.

Using average age of initiation as an impact target to measure drug control performance also seems intuitively inappropriate. By listing "raising the average age of initiation" as the only objective associated with drug initiation, *The 1998 Strategy* fails to capture what is really desired: a reduction in the number of first-time drug users. By focusing solely on raising the average age of drug initiation, however, a feasible outcome could be a rise in initiation age along with an increase in the total number of first-time users. On the other hand, focusing on reducing the *total number* of illicit drug initiates as a measure of performance rather than average initiation age not only implies that fewer youths will be experimenting with drugs, but comparing the number of drug initiates with drug use shows that an initiate-reduction policy will also reduce drug use among America's youth.



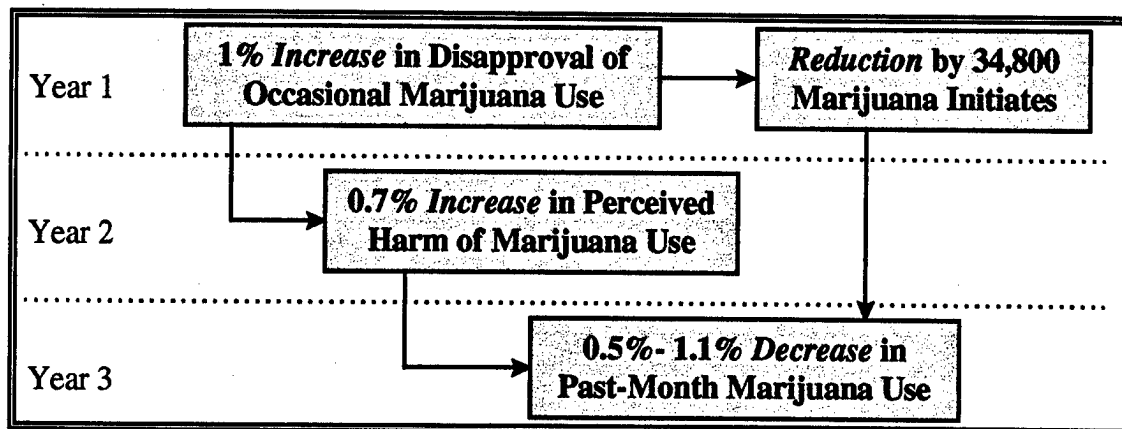
Data Source: 1997 Monitoring the Future Survey and 1997 NHSDA

Not surprisingly, there is a strong statistical correlation between drug initiation and drug use. However, the strongest relationship contains a two year lag, just like that exhibited by youth disapproval of marijuana use and actual marijuana use rates themselves. Appendix C contains the regression analysis of these relationships:

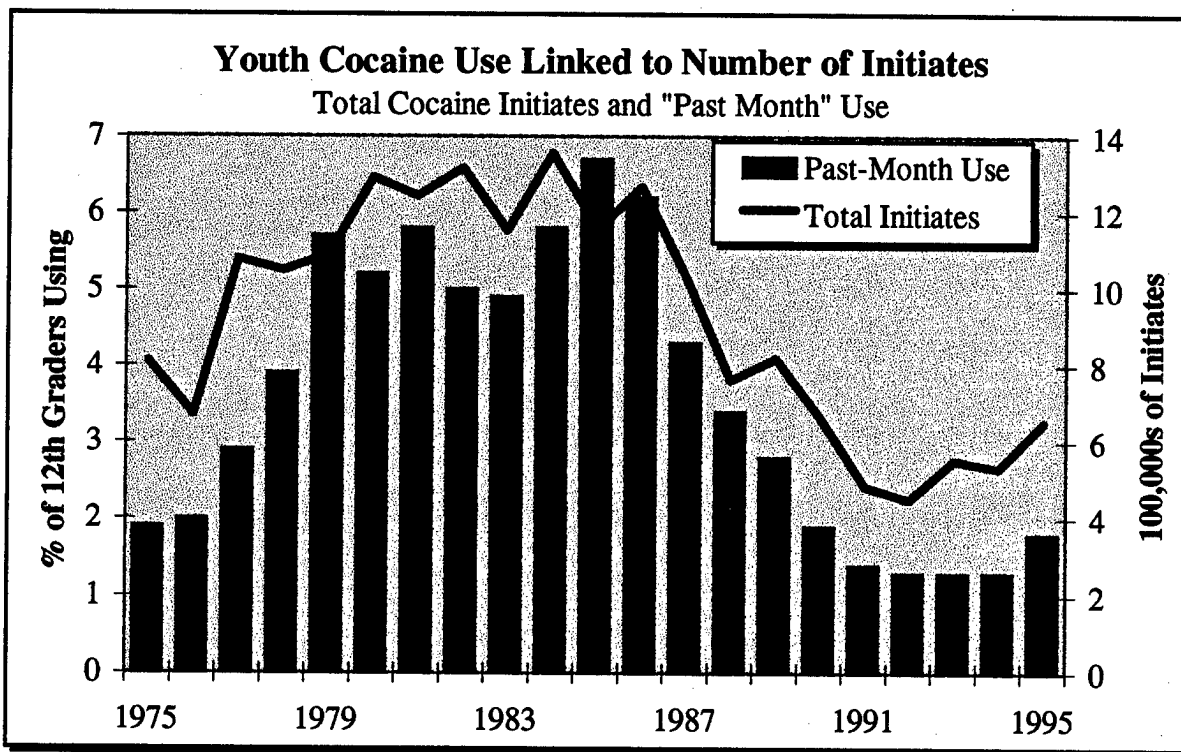
- Each *decrease* in 100,000 marijuana initiates will produce a *decrease* in marijuana use by 1.14 percentage points two years later
- Each *increase* by 1% of youths who disapprove of occasional marijuana use produces a *decrease* of 34,800 marijuana initiates for that year

Most importantly, these relationships demonstrate that the reduction in use rates two years after disapproval increases is not necessarily due solely to youths being dissuaded from becoming regular users of marijuana, but also because they are dissuaded from initially using at all. Thus, *Blueprint* should explicitly focus on the relationship between youth attitudes, number of drug initiates, and drug use rates rather than on age of initiation. The following chart summarizes the causal relationships discussed in this chapter thus far:

The Statistical Relationship Between Attitudes, Initiation Rates, and Marijuana Use



The connection between number of initiates and drug use is not limited to marijuana. Cocaine also demonstrates a strong relationship between drug initiation and drug use among youth.



Data Source: 1997 Monitoring the Future Study and 1997 NHSDA

As Appendix C indicates, however, the strongest relationship between initiation rates and youth cocaine use occurs when the two are regressed in the *same* year. This should not be too

surprising, considering that the same is true for youth attitudes towards cocaine and 12th grade use rates. The regression can be summarized in the following statement:

- **Each decrease in 100,000 cocaine initiates will produce a decrease in cocaine use by 0.57 percentage points *in the same year***

Unfortunately, this relationship is not of much use in explaining *how* to limit cocaine initiation.

Unlike marijuana, there is no causal link between youth attitudes on cocaine and the number of cocaine initiates.

By analyzing patterns in historical trends in youth attitudes on drug use, drug initiation, and use rates themselves, this report has answered the three questions posed at the beginning of this chapter. These answers are summarized below:

- Targeting youth attitudes on *marijuana*, rather than cocaine or heroin, should take priority in ONDCP's drug control strategy since attitudes concerning these other drugs seem to have no measurable affect on youth drug use.
- An increase in the percentage of 12th graders who disapprove of occasional marijuana use generates a reduction in the percentage of youths who use marijuana on a monthly basis two years later.
- Increasing youth disapproval of marijuana in particular also tends to decrease the number of marijuana initiates in that same year, but no similar relationship holds true for youth disapproval of cocaine. However, a reduction in marijuana initiates does produce a reduction in cocaine initiates three years later.

- Reducing the number of initiates for both marijuana and cocaine lowers the rate of illicit drug use among youth.
- Increasing the average age of initiation for any drug, however, has no affect on either the number of new initiates of that drug or on drug use rates among youth.

INCREASING YOUTH DISAPPROVAL OF MARIJUANA USE, THEN, NOT ONLY REDUCES MARIJUANA USE AND INITIATION, BUT INDIRECTLY PRODUCES THE SAME EFFECTS ON COCAINE USE AND INITIATION.

CHAPTER II

DRUG USE AND AVAILABILITY: EVALUATING SUPPLY-REDUCTION STRATEGIES

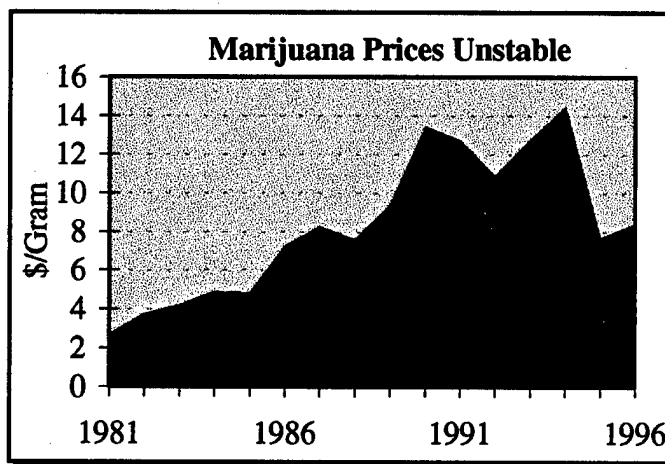
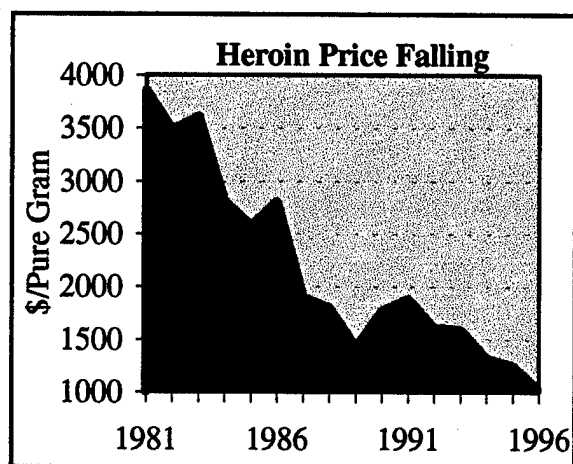
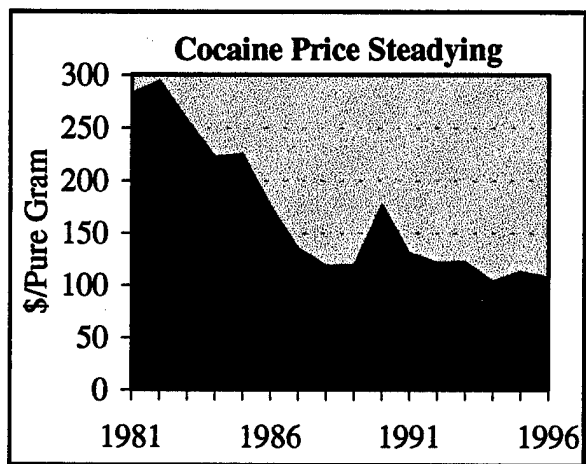
The second means through which drug use can be reduced is by limiting the supply of illegal drugs available for consumption. Unlike the demand reduction strategy discussed in Chapter I, supply reduction aims to discourage use not by changing attitudes but rather by making the cost or risk of obtaining drugs prohibitively high. ONDCP has identified three basic impact targets towards achieving the *1998 Strategy's* comprehensive goal of reducing drug availability in the U.S. by 50% by 2007:

- (1) Reduce the illegal drug flow through High Intensity Drug Trafficking Area (HIDTA) regions by 20%
- (2) Reduce the entry of illicit drugs and drug-making chemicals into the U.S. by 50%
- (3) Reduce domestic production of illegal drugs (namely methamphetamine and marijuana) by 50%

One of the key elements missing in ONDCP's impact targets is any reference to drug price. Perhaps this is intentional, but drug price remains one of the only supply-side factors for which reliable data exists. The amount of drugs seized and total drug availability estimates can be helpful, but they fail to address the exact quantity of illicit drugs available at the street level in America. Although one would hope that ONDCP's demand-reduction strategy would tend to detract from any supply-reduction efforts by lowering street prices, street price is probably the most accessible and meaningful measure of drug availability at this time, and it will be the primary focus in this chapter.

It is no secret that illegal drugs are quite easily obtainable by practically anyone who is willing to try. Over the past twenty years, 85% of 12th graders have consistently reported

marijuana as being “fairly easy to obtain,” and 50% have consistently reported the same for cocaine. Meanwhile, marijuana price is near its lowest point in ten years, and the street price of cocaine and heroin are at historic lows – both having devalued well over 50% since 1981.



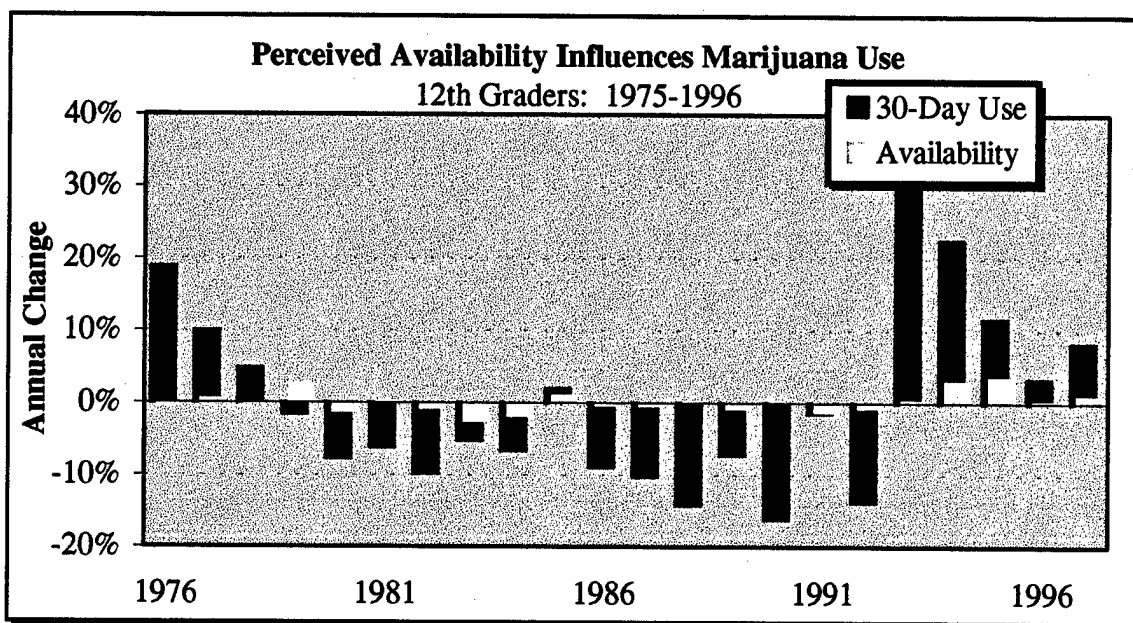
Data Source: 1981-1996 STRIDE Data

Just as attempting to influence the population's attitudes towards illegal drugs has different effects on drug use rates for different substances, though, reducing the availability of drugs is also likely to be more effective in reducing the use of some drugs more than others. This section of the report will focus on the role that supply-reduction strategies play in influencing drug use by addressing the following two questions:

- Do drug prices influence people's (and particularly youths') decisions to use drugs? If so, for which drugs does this relationship hold?
- Is it possible that drug availability is perceived in a way such that it is not completely dependent upon street-level drug prices? In other words, is increasing price the only way to make illegal drugs appear less available?

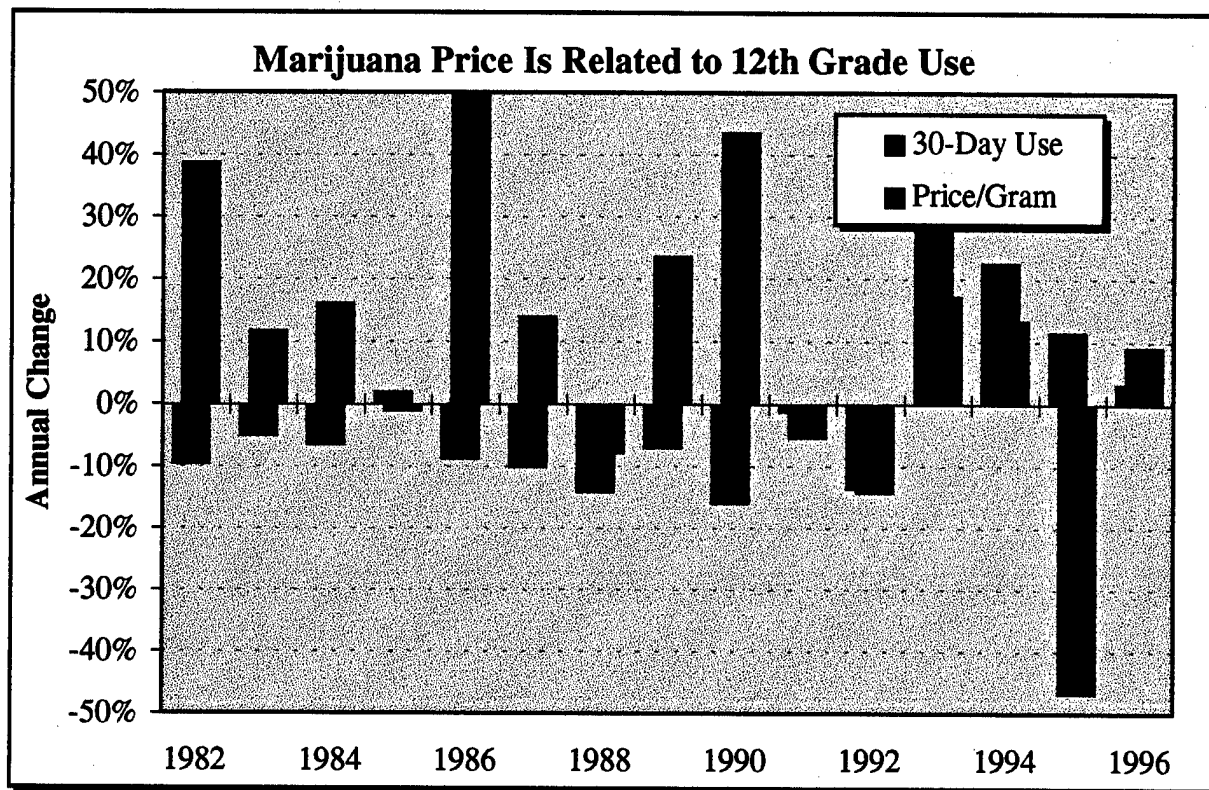
The connection between perceived availability, street price, and youth use rates seems particularly strong in the case of marijuana. First of all, there is a clear relationship between street price of marijuana and youth perceptions of the drug's availability. An increase in marijuana price translates into a decrease in the percentage of 12th graders who view marijuana as "easy to obtain." Furthermore, both perceived availability and actual availability (as measured through price) are strongly correlated with the number of 12th graders who use marijuana on a monthly basis. Appendix D explains these relationships in detail, and they are summarized below:

- Each increase of 1% in the percentage of youths who view marijuana as "fairly easy to obtain" produces an increase in marijuana use by 2.6 percentage points



Data Source: 1997 Monitoring the Future Study, University of Michigan

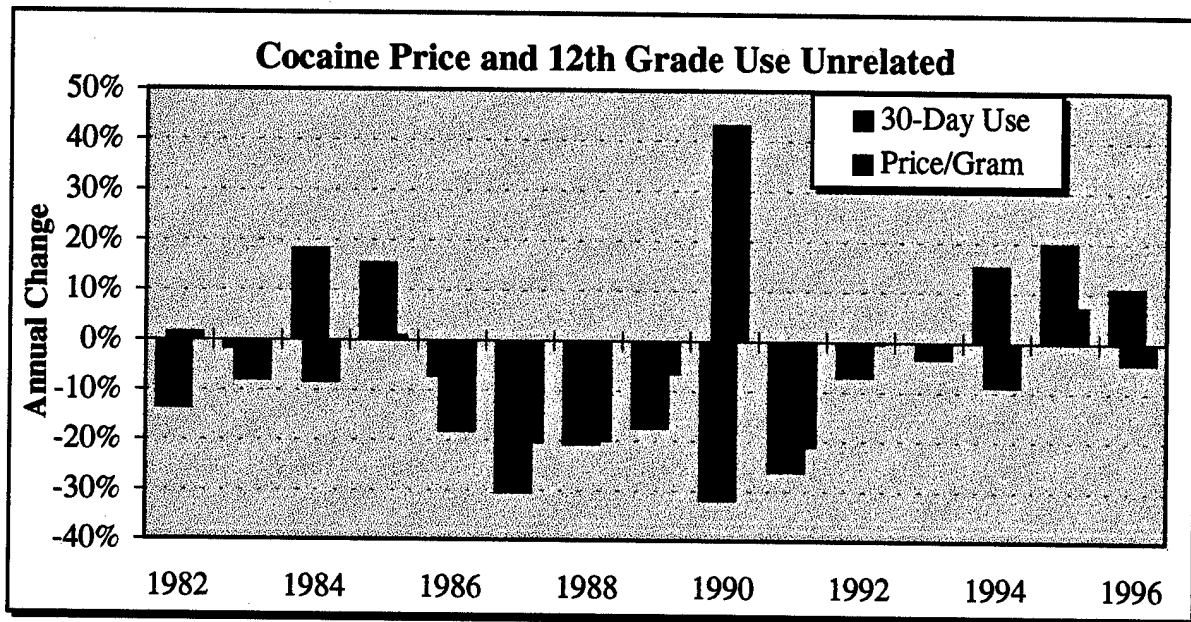
- Each \$1/gram increase in street price produces a decrease in marijuana use by 1.4 percentage points



Data Source: 1997 Monitoring the Future Study / STRIDE Data (1981-1996)

Although marijuana price seems to influence regular drug use rates among youth, it does not seem to have a significant impact on initiation rates. In other words, the price of marijuana is not a factor in determining whether an individual will try the drug for the first time, but it may influence his decision to continue using the drug on a regular basis. On the other hand, there is a connection (albeit a weak one) between youths' *perceptions* of availability and initiation rates (see Appendix D). Still, given the relative immobility of youths' perceptions of availability over the past decade and the lack of any strong correlation between availability and initiation rates, it seems that the best way to limit first-time illicit drug use is by reducing youths' demand for drugs rather than by limiting the drug supply.

Unlike marijuana, there is no measure of availability for cocaine that seems to affect either youth use rates or the number of first-time users.



Data Source: 1997 Monitoring the Future Study / STRIDE Data (1981-1996)

While the lack of strong correlation between marijuana supply and use is partially explained by the fact that marijuana use seems to be more dependent upon demand (as measured by youth attitudes) than supply (as measured by street prices), such a relationship is not present in the case of cocaine. One possible reason for this is simply the nature of the *Monitoring the Future Study* (MTF) as a measure. First, MTF undercounts the number of youth for whom prices might pose a real deterrent to regular cocaine use – that population being inner-city minorities who do not regularly attend school. Second, as the number of 12th graders who use cocaine constitutes only a negligible percentage of the total cocaine-using population, the effect of prices on youth use rates may not be representative of the effect on cocaine use in general. Finally, it may be that among youth, the “gateway effect” of marijuana described in both the introduction and Chapter I dominates over other predictors of cocaine use. In any case, cocaine availability does not seem to play a significant role in determining past-month use rates among youth.

Nevertheless, it is still important to determine exactly what influences movements in the street prices of illegal drugs, especially since the preceding analysis indicates that at least in the case of marijuana, higher drug prices tend to result in lower use rates. Unfortunately, there is no historically-reliable data source related to drug availability on the national scale (other than drug price). Even if estimates of drug seizures were possible, prices tend to be dictated on a local level rather than a national one, and therefore even large seizures of international shipments are unlikely to have immediate, noticeable effects on the national average street price of illegal drugs.

By analyzing trends in youth perceptions and street prices on use measures for marijuana and cocaine, this report has answered the questions posed at the beginning of this section. The important conclusions are summarized below:

- Reducing marijuana price affects 12th graders' perceptions of marijuana availability and also decreases both youth use rates and the number of annual marijuana initiates.

However, this effect is not as significant as that demonstrated by increasing youth disapproval of marijuana.

- Street price of cocaine is not significantly correlated with youth perceptions of cocaine's availability, youth use rates, or annual initiation to the drug. Therefore, the price of cocaine does not seem to be an important factor in reducing past-month cocaine use.

IN GENERAL, YOUTH ATTITUDES ON DRUG USE SEEM TO BE BETTER INDICATORS OF DRUG USE AND INITIATION RATES THAN MEASURES OF AVAILABILITY FOR ALL ILLICIT DRUGS.

CHAPTER III

DRUG CONSEQUENCES AND DRUG EPIDEMICS: A SUPPLY-REDUCTION FAILURE

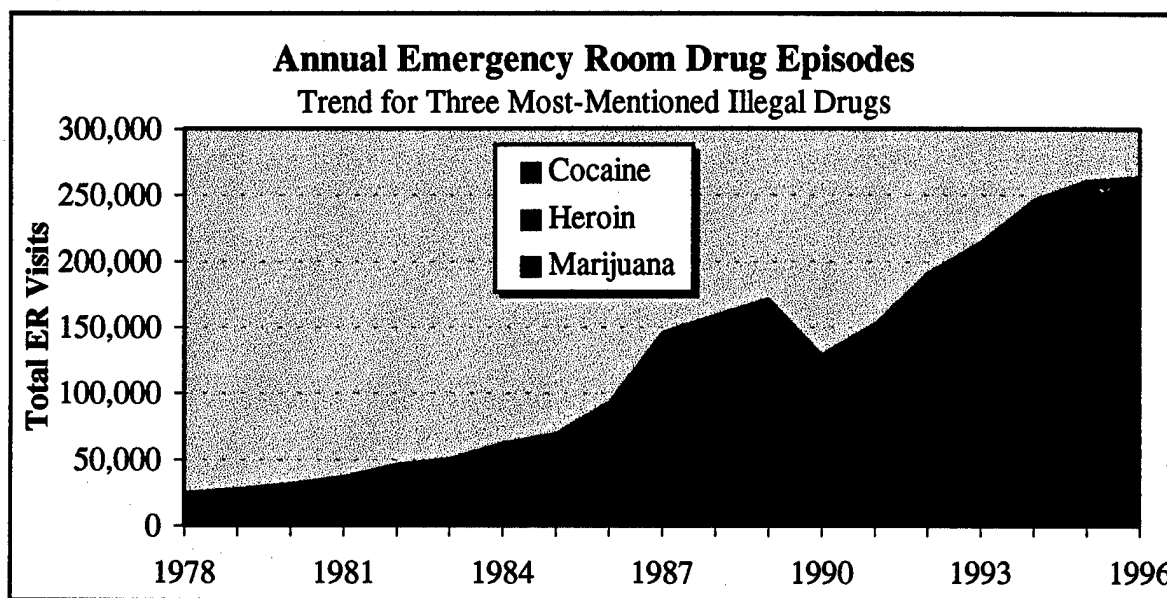
The final and most important means through which illegal drugs can be addressed is by reducing the consequences associated with drug use and drug markets. Drug consequences represent the culmination of illegal drug use and availability – the violence, crime, and substance-induced medical emergencies – which ONDCP’s counter-drug strategy ultimately attempts to prevent. Two of the *Performance Measures* impact targets for 2007 focus directly on reducing the consequences of illegal drugs:

- (1) Reduce the rate of crime and violent acts associated with drug trafficking and drug abuse by 30% from 1996 levels
- (2) Reduce the health and social costs attributable to illegal drug trafficking and use by 25% from 1996 levels

As these impact targets point out, drug consequences can result from two different factors: drug use and drug markets. One of the greatest problems in attempting to limit drug consequences is that attempting to address one area often adversely effects the other. For example, targeting drug use by limiting drug availability can reduce health costs and crime associated with drug use, but increased prices and risk associated with dealing can make drug markets more violent and thus potentially *increase* crime. For this reason, measuring any policy’s impact on crime and violence is extremely difficult. Therefore, this section of the report will focus only on consequences solely related to drug abuse by examining trends in drug-induced medical emergencies.

The Drug Abuse Warning Network (DAWN) has compiled statistics on “emergency room drug episodes” for the last twenty years based upon data from over 700 hospitals in

21-largest metropolitan areas. The total number of emergency room drug episodes in America have been steadily increasing over the past twenty years and reached an unprecedented high in 1996. Since 1990, marijuana episodes have tripled, heroin episodes have more than doubled, and cocaine episodes have increased by over 75%, even after the “end” of the crack epidemic.



Data Source: “Historical Estimates from the Drug Abuse Warning Network,” SAMHSA

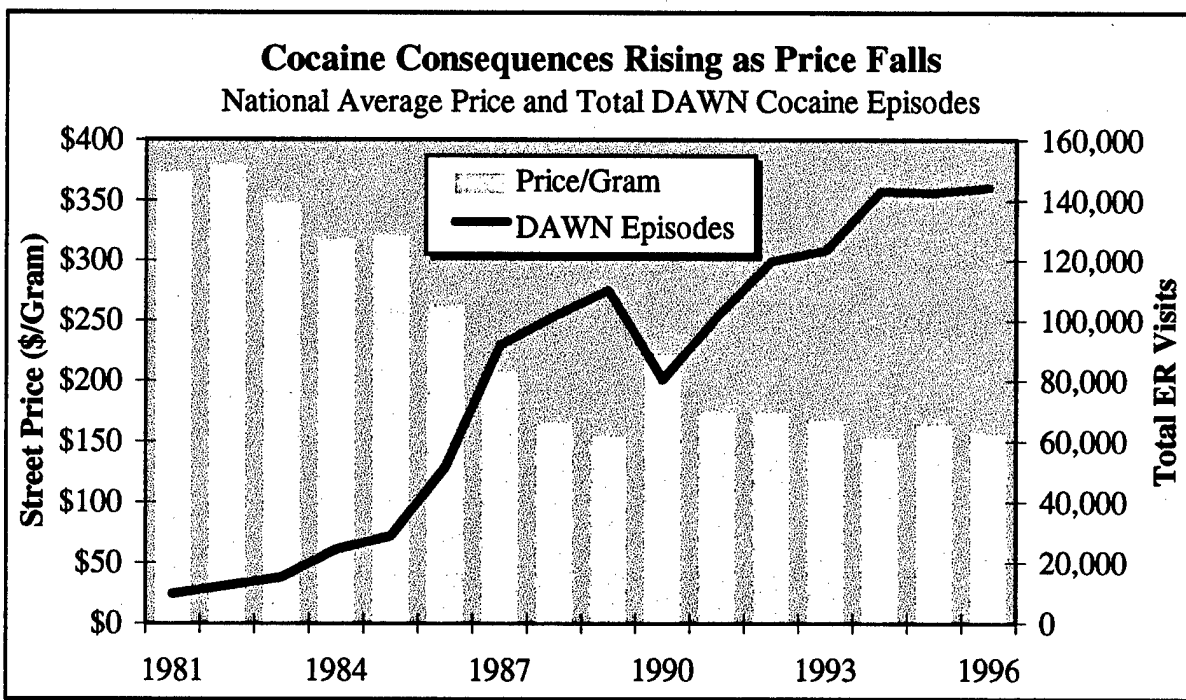
Because actual drug use rates are not increasing, however, few people are alarmed at this trend, even though a quarter of a million annual drug overdoses serious enough to warrant hospitalization should be cause for concern. This chapter of the report will focus on explaining this increase in drug-use consequences by answering the following questions:

- Is the increase in emergency room drug episodes attributable to any drug use or drug availability measure? If so, what seems to be the best means to reduce these consequences?
- Do drug consequences point to any potential drug problems of epidemic proportions which ONDCP should address?

Interestingly, no statistically-significant relationship exists between drug-induced emergency room episodes and levels of use for any drug. In fact, the total number of marijuana, cocaine, and heroin users has been relatively constant since about 1990 even though emergency room visits between the three have nearly doubled over that same period. Nor does there appear to be any significant connection between either age-specific use rates or initiation rates and drug-use consequences for any drug. However, when we revisit the trends in street-prices of illegal drugs examined in Chapter II, some of the mystery behind the increase in drug consequences disappears.

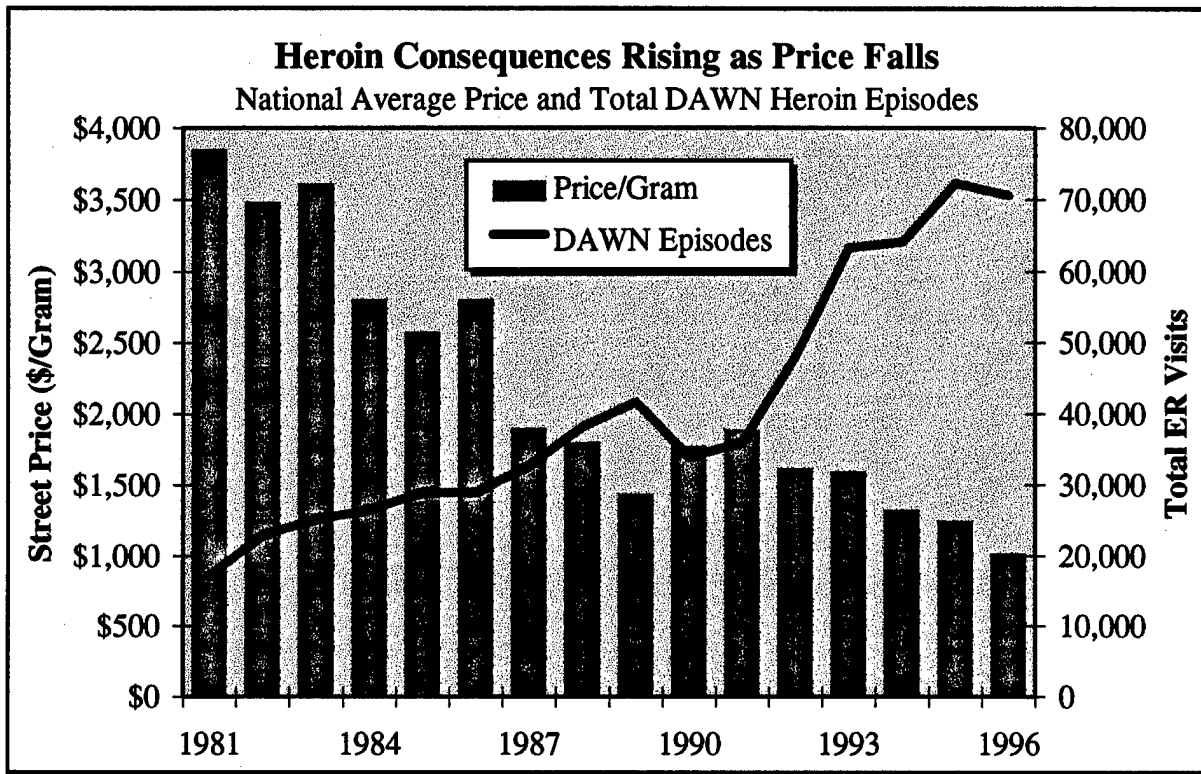
As Appendix E shows, there is a very strong (and likely causal) relationship between street prices and emergency room drug episodes for both cocaine and heroin, although such a relationship does not exist between marijuana prices and drug episodes:

- For every \$1/gram *increase* in the street price of cocaine, there are 721 *fewer* cocaine-related emergency room episodes



Data Source: 1981-1996 STRIDE Data / "Historical Estimates from DAWN," SAMHSA

- Additionally, for every \$1/gram *increase* in the street price of heroin, there are 17 *fewer* heroin-related emergency room episodes



Data Source: 1981-1996 STRIDE Data / "Historical Estimates from DAWN," SAMHSA

If we relate these goals back to the *Performance Measures* objective of "reducing health costs of illegal drug use by 25% by 2007," this means that:

- (1) Cocaine prices must increase by \$50 to reduce the number of cocaine-related drug episodes by 35,000. This represents a 30% increase from the 1996 street price
- (2) Heroin prices must increase by \$1030 to reduce the number of heroin-related drug episodes by 17,500. This represents a 100% increase from the 1996 street price.

The fact that prices have fallen by much more than these amounts in the last ten years makes these goals seem relatively modest and achievable.

Given the lack of any significant relationship between cocaine and heroin-related medical emergencies and the number of casual or first-time users, it is not surprising that the increases in drug-related emergency room visits are *not* primarily attributable to casual drug users who accidentally overdose or experience unexpected reactions to drugs. In fact, according to the DAWN data, nearly 80% of heroin episodes and 65% of cocaine episodes involve chronic users of the drugs who are seeking detoxification, and over 80% of all episodes involved individuals over 26 years old. Thus, the vast majority of health-related drug-use consequences result from older chronic users rather than younger casual ones.

In combination with Chapter II's findings, these relationships between drug price and drug-use consequences offer a new hypothesis: purity-adjusted street prices for cocaine and heroin, while not important in regulating use among the majority of the population, are very influential in determining *how much* those with a drug dependency tend to use – either intentionally or accidentally. Increasing drugs' street price, therefore, will likely produce a large reduction in health consequences associated with chronic drug use even if it does not directly reduce the number of overall drug users in the population. Furthermore, although the statistical analysis in Chapter II showed no causal link between *decreasing* prices the number of drug users, making drug habits financially impossible to support by *increasing* prices may also reduce the actual number of chronic users by forcing them to seek medical assistance for their dependencies.

These trends in drug use consequences also point out the alarming failure of supply-reduction policies over the past decade. Of course, theoretically, a decrease in drug price could be attributed either to the failure of supply-control efforts *or* to the success of demand-reduction policies, as the following chart shows. For both heroin and cocaine, however, the current situation seems more likely attributable to the former. The combination of low drug prices and

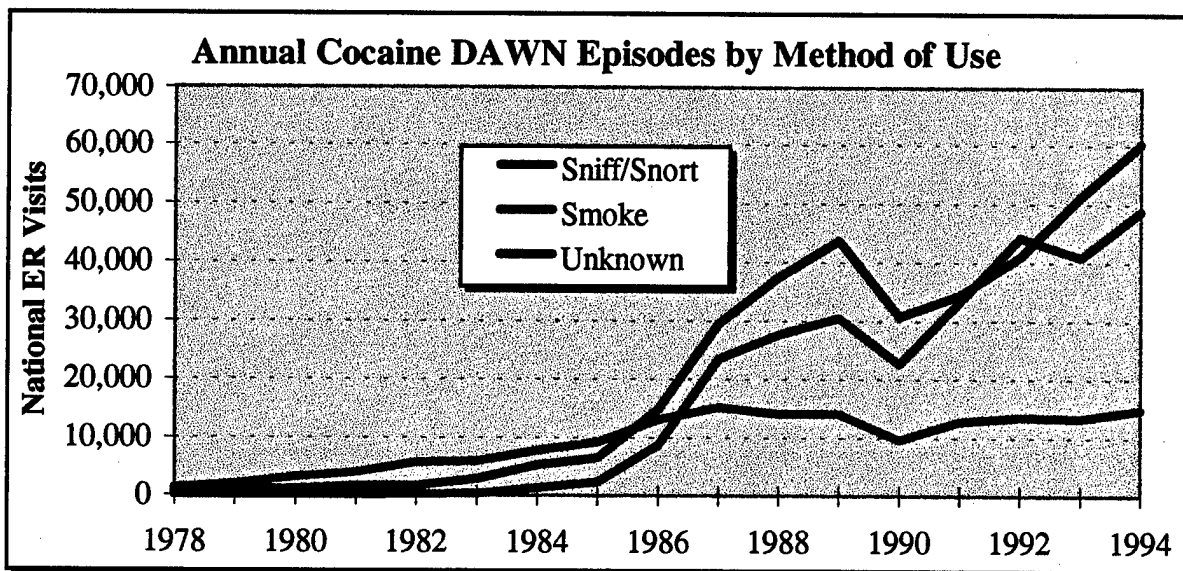
high levels of drug-use consequences, in addition to a stable (if not increasing) base of both chronic users and initiates since 1990 points to an unqualified failure on behalf of drug control agencies to reduce drug availability.

Evaluating Potential Results of a Supply-Reduction Policy

	Increase in Use	Decrease in Use
Increase in Price	indeterminate	Supply-Side Success
Decrease in Price	Supply-Side Failure	indeterminate

Source: Mark Moore, Kennedy School of Government, Harvard University

A further exploration of the consequences of cocaine use reveals that the “cocaine epidemic” is far from being a crisis of the past, even if use rates are down from their highs in the late 1980’s. In fact, based on the tendency of MTF and NHSDA surveys to undercount drug users who are either in prison, homeless, or youths who do not attend school (populations which all claim high drug-use rates) and the increasing rate of cocaine-induced medical emergencies, there is reason to believe that cocaine use is as high as ever. Moreover, the problem seems largely limited to crack users – even more discouraging considering the recent federal efforts to target crack use and distribution.



Data Source: “Historical Estimates from DAWN,” Advance Report #16, SAMHSA

From this chart, it is apparent that nearly all of the increase in cocaine-use consequences is due to cocaine which is smoked – namely crack. Additionally, the “unknown” method of consumption follows that of crack so closely that most of the episodes under this categorization are probably due to crack as well.

What does this all mean? For one thing, the persistence of the crack epidemic and the recent crash of heroin prices and influx of heroin-induced medical episodes indicates that ONDCP should refocus its efforts on raising drug prices, especially considering the looming possibility of another heroin epidemic. Raising drug prices will become increasingly-difficult as demand-control policy further reduces the pool of potential hard-core drug users, and as the drug seizure information suggests, any policy which advocates “more of the same” will not produce any more promising results. Nevertheless, increasing drug prices seems to be the best means of reversing the current trend of rising drug-use consequences, at least until more effective and far-reaching treatments can be developed for chronic drug users.

Of course, ONDCP does not determine drug prices, but the policies and recommendations of ONDCP can go along way towards influencing the way with which drug markets are dealt on the community level. The core of the drug problem will continue to be well established markets fueled by a large but unknown number of violent chronic users – and the massive resources consumed by ten years of “get tough” strategies have exhausted the sanctioning end of the criminal justice process and left little room for expansion of such policies. To the common user and dealer alike, the deterrence effect of draconian drug laws is nil given the fact that the criminal justice system rarely has either the capacity or the resources to ensure that even those few who are apprehended are incarcerated. Instead, ONDCP should encourage enforcement

agencies to focus on shutting down the drug markets themselves, rather than individual buyers and dealers, through new innovations in community policing such as open-air drug market enforcement and coerced abstinence programs (see Appendix F).

By analyzing the effect of drug prices on drug-use consequences, this section has answered the questions posed at the beginning of the chapter. The results are summarized below:

- Drug-related emergency room episodes have reached unprecedented levels for cocaine, heroin, and marijuana. Of these three drugs, cocaine and heroin appear to be the most dangerous in terms of their high consequence-to-use ratio.
- Although cocaine and heroin prices are not related to drug use rates, they are closely linked to the number of drug-induced medical consequences of each. Raising street prices appears to be an important factor for reducing these consequences. While both the implications of raising street prices of illicit drugs and the means of doing so are not fully understood, the affect of availability on users' decision to do drugs at least deserves a good deal more attention than it has previously been given.
- Since chronic users compose most of the victims of drug-use medical consequences, Reducing use among hard-core users will greatly decrease drug-related emergencies.
- The increase in drug consequences and decrease in drug prices indicates:
 - (1) The crack epidemic is *not* over and persists among chronic crack users
 - (2) There is a significant risk of another heroin epidemic in the near future

DRUG-USE CONSEQUENCES FOR CRACK AND HEROIN HAVE REACHED ALARMING LEVELS. INCREASING DRUG PRICES APPERARS TO BE THE MOST EFFECTIVE SHORT-TERM MEANS OF REDUCING THESE CONSEQUENCES

PRINCIPAL FINDINGS

By examining the historical relationships between different measures of drug use, availability, and consequences, this report has attempted to answer five prevailing questions:

- (1) What are the most important factors in reducing illegal drug use and its consequences?
- (2) What are the best measures available to monitor these factors?
- (3) How should ONDCP assign priority to these factors?
- (4) Which aspects of illegal drugs pose the greatest risk?
- (5) What issues does ONDCP need to address that are not discussed either *The 1998*

National Drug Control Strategy or Performance Measures of Effectiveness?

The following pages summarize the findings of this report in response to these questions:

<p>INCREASING <u>YOUTH DISAPPROVAL OF MARIJUANA USE</u> SHOULD RECEIVE TOP PRIORITY OVER ALL OTHER OBJECTIVES AIMED AT REDUCING YOUTH DRUG USE..</p>

- Each *increase* of 1% in youth disapproval of occasional marijuana use generates two favorable outcomes:
 - (1) A 0.8% *decrease* in youth use rates two years later.
 - (2) A reduction in marijuana initiates by 34,800 in that same year.
- These outcomes are particularly important because of the “gateway effect” which marijuana initiation tends to have on cocaine initiation. For every 100,000 fewer marijuana initiates, the following also results:
 - (1) A decrease in youth past-month marijuana rates by 1.14% two years later.
 - (2) A decrease in the number of cocaine initiates by 136,500 three years later. In turn, this reduction in cocaine initiates lowers youth cocaine use rates by 0.60 percentage points that same year.
- Increasing the average age of initiation for any drug, however, has no effect on either the number of new initiates of that drug or on drug use rates among youth. This impact target should be abandoned.

ADDRESSING YOUTH ATTITUDES IS A MORE EFFECTIVE MEANS OF LOWERING DRUG USE AND INITIATION RATES THAN MEASURES OF AVAILABILITY. THIS IS TRUE FOR ALL ILLICIT DRUGS.

- Reducing marijuana price decreases both youth use rates and the number of annual marijuana initiates. However, this effect is not as significant as that demonstrated by increasing youth disapproval of marijuana.
- Street prices of cocaine and heroin are not significantly correlated with youth perceptions of the drugs' availability, youth use rates, or annual initiation to the drugs. Therefore, the price of cocaine and heroin do not seem to be important factors in reducing past-month use of these drugs.

DRUG-USE CONSEQUENCES FOR CRACK AND HEROIN HAVE REACHED ALARMING LEVELS AND DESERVE IMMEDIATE ATTENTION IF FURTHER EPIDEMICS ARE TO BE AVOIDED. INCREASING DRUG PRICES IS THE MOST EFFECTIVE MEANS OF REDUCING THESE DRUG-USE HEALTH CONSEQUENCES

- The increase in drug consequences and decrease in drug prices indicates:
 - (1) The crack epidemic is *not* over and persists among chronic crack users
 - (2) There is a significant risk of another heroin epidemic in the near future
- Raising street prices is the first step towards reducing these consequences. Cocaine and heroin prices are closely linked to the number of drug-induced medical consequences of each.
- Since chronic users compose most of the victims of drug-use medical consequences, the second step towards reducing drug consequences is reducing the number of hard-core drug users by providing them with appropriate addiction rehabilitation services.
 - (1) ONDCP's successful Cook County (Chicago, IL) study on estimating the number of chronic users not counted by traditional drug use surveys represents an important innovation in the national counter-drug effort, and expanding this study to a national level should give an accurate snapshot of America's chronic use problem.
 - (2) ONDCP should explore the possibility of coerced abstinence programs as an alternative method of preventing drug use among known criminal offenders – a population that by many estimates contains 70% of America's chronic cocaine and heroin use

SHORT TERM RECOMMENDATIONS

In addition to the above recommendations, there are several shortcomings of

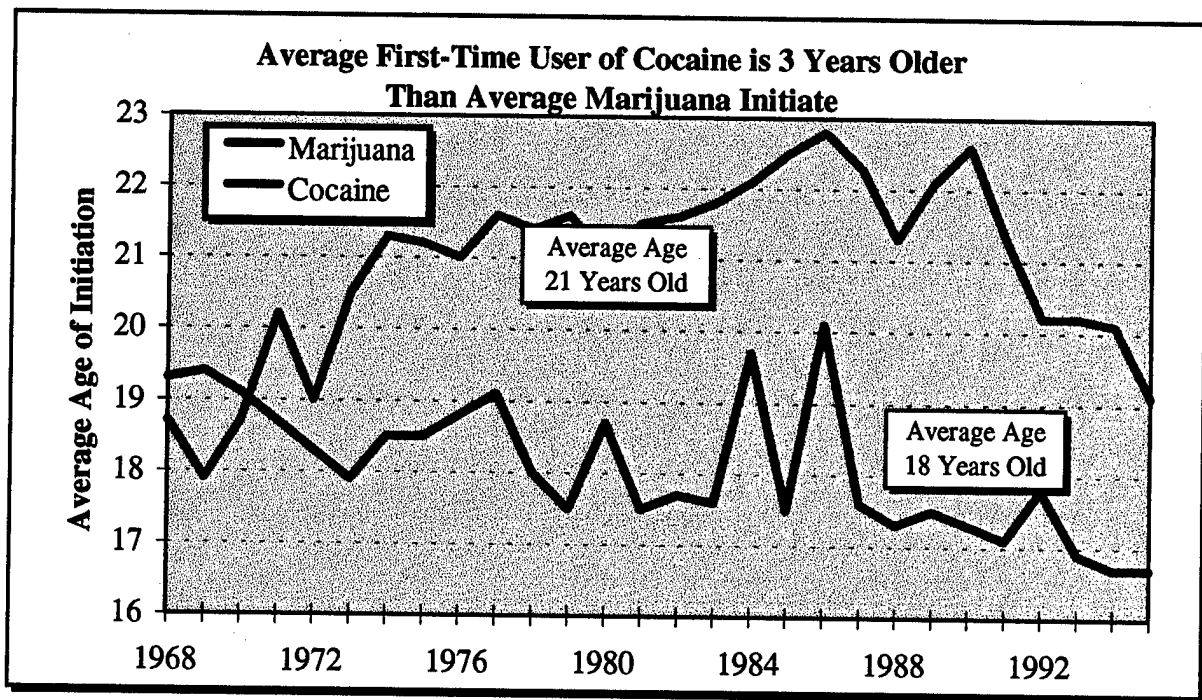
Performance Measures of Effectiveness on which ONDCP should take immediate action:

- (1) First of all, ONDCP's primary measures of use, MTF and NHSDA, fail to account for two of the populations most affected by illegal drugs: hard core drug users, and those individuals (often inner-city minorities) who do not have permanent homes or regularly attend classes. Considering the rising severity of consequences which these populations are disproportionately burdened, it is extremely important to develop new measures for monitoring drug use among these populations.
- (2) Second, the lack of focus on crack and heroin in *Performance Measures* is disturbing given the tremendous increase in consequences of use for these drugs. Although this report shows that reducing marijuana use will contribute to reducing the consequences of cocaine and heroin use as well, preventing future epidemics demands that more direct emphasis be placed on alleviating the drug-use consequences of these drugs.
- (3) Finally, as this report makes evident, ONDCP needs to clarify the relationship between drug seizures, drug prices, and drug availability. *Performance Measures* never explicitly mentions "raise drug prices" as a goal or objective. While prices are probably the best and most easily-determined measure of drug supply (and the most effective in limiting drug consequences), the overall supply-reduction policy advocated by ONDCP does not directly link increasing drug street prices to decreasing drug availability in the general population.

APPENDIX A

EVIDENCE SUPPORTING THE "GATEWAY" THEORY

Marijuana use by itself creates far less risk of adverse consequences (both to the society and to the user himself) than many other illicit drugs. However, this does not imply that marijuana use should not be averted on other grounds. One of the principal reasons for focusing on preventing marijuana use is that marijuana serves as a "gateway" to other more dangerous and addictive illegal drugs, namely cocaine. The gateway theory states that most individuals who experiment with cocaine were anesthetized to illegal drugs by previous experimentation with marijuana. Thus, by preventing youths from experimenting with marijuana, they may be deterred from experimenting with other drugs later in life.



Data Source: 1997 National Household Survey on Drug Abuse, SAMHSA

While there are many factors that influence an individual's decision to begin using an illegal drug, the relationship between marijuana initiation and cocaine initiation certainly exists, even if it is not a fully causal one. First of all, while the average age of initiation for both cocaine

and marijuana has varied widely over the years, marijuana initiation tends to occur three years earlier than cocaine initiation. Next, as already demonstrated by the figure on page 2 of the introduction, the trend for cocaine initiates very closely follows the trend for marijuana initiates three years before. In other words, a consistent proportion of those individuals who first experiment with marijuana also experiment with cocaine approximately three years later. Statistical regression on the number of marijuana and cocaine initiates confirms this:

Regression Analysis on Number of Marijuana and Cocaine Initiates 3 Years Later

	Coefficient	Std Error	P-Value
Intercept Term	0.076	0.064	0.246
Change in Marijuana Initiates	1.365	0.299	1.167 E -05

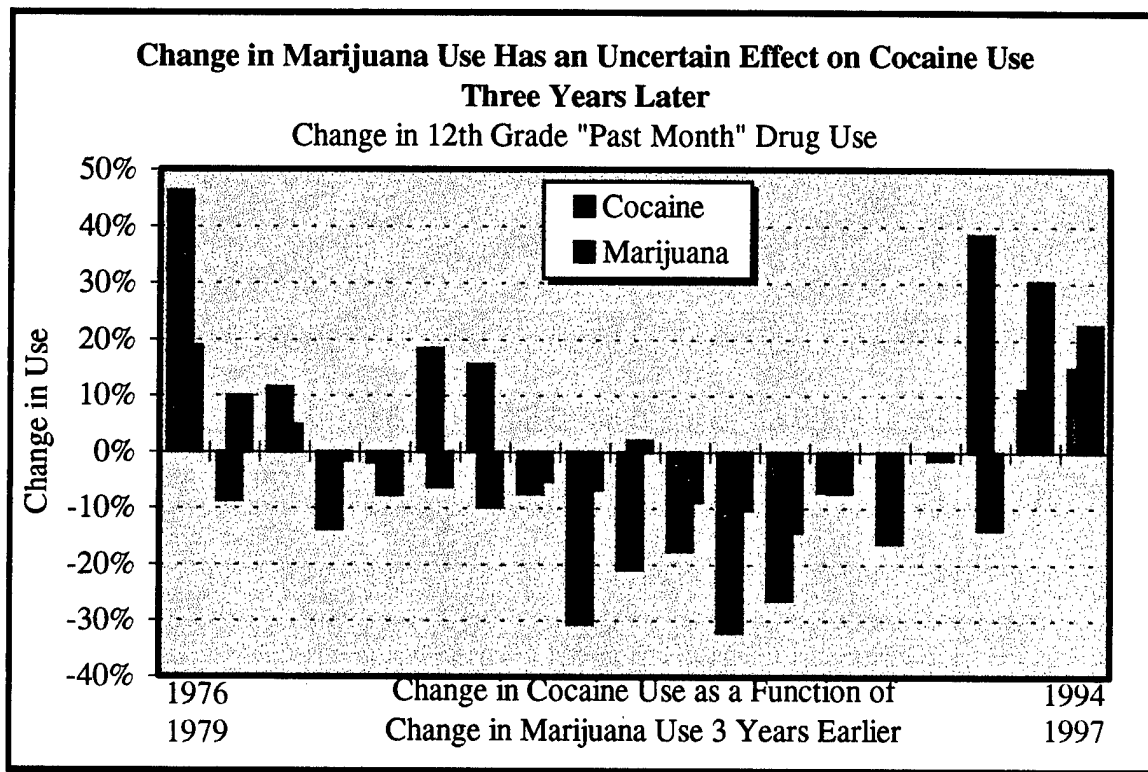
The very small p-value for the coefficient on our independent variable indicates that we can be over 99.9% confident that a positive relationship exists between the number of marijuana initiates and cocaine initiates three years later. The following equation summarizes this relationship:

$$\text{Change in Cocaine Initiates} = 1.365 * \text{Change in Marijuana Initiates 3 Years Before}$$

Therefore, for every decrease in the number of marijuana initiates by 1,000, we could expect a 1,365-person decrease in the number of cocaine initiates three years later.

It is important to note that while positive correlations exist when we regress marijuana initiates and cocaine initiates at time intervals other than three years, none of these produces a level of significance anywhere near that of the three year interval (that is, the p-values are greater than 0.01). If marijuana is a true gateway with an average initiation age three years younger than that of cocaine, this is exactly the strength of relationship that we would expect for a regression with a three-year time lag.

We might expect the number of regular users of a given drug to be clearly linked to the number of that drug's initiates as well. However, the correlation between actual rates of *use* for marijuana and *use* levels for cocaine three years later does not appear to be as strong as one might expect. This certainly does not falsify the connection between initiates of the two drugs, but it does serve as a caution towards arguing that just because reducing the number of marijuana initiates will reduce cocaine initiation, it is automatically the case that lowering marijuana use rates will have an equal impact on cocaine use three years later.



Data Source: 1997 Monitoring the Future Study, University of Michigan

APPENDIX B

STATISTICAL REGRESSION OF YOUTH ATTITUDES AND USE RATES

Running a time-series regression on the *Monitoring the Future* data for 12th grade attitudes towards “occasional” marijuana use and past-month marijuana use data demonstrates that there is a strong relationship between change in disapproval of occasional marijuana use and change in the perceived harm of such use the following year.

Regression Analysis on Youth Disapproval and Youth Perceptions of “Great Risk” (Marijuana)

	Coefficient	Std Error	P-Value
Intercept Term	-19.096	2.865	1.728 E -06
Change in Disapproval of Use	0.701	0.044	9.470 E -13

The very small p-value for the coefficient on the independent variable indicates that we can be practically 100% confident that there is a positive relationship between the change in youth disapproval and the change in youths who perceive occasional marijuana use to be of “great risk” in the next year. The equation below summarizes this relationship:

$$\text{Change in Perceived Harm in Year (t)} = 0.70 * \text{Change in Disapproval Rate in Year (t - 1)}$$

A similar regression on change in perceived harm and past-month marijuana use among 12th graders confirms that the connection between these is equally as strong:

Regression Analysis on Perceived Harm and Youth Past-Month Use Rates (Marijuana)

	Coefficient	Std Error	P-Value
Intercept Term	52.211	1.798	7.977 E -18
Change in Perceived Harm	-1.123	0.071	8.668 E -13

$$\text{Change in Use Rate in Year (t)} = -1.12 * \text{Change in Perceived Harm Rate in Year (t - 1)}$$

By combining these two regressions, we have the following equation:

$\text{Change in Marijuana Use Rate in Year (t)} = -0.79 * \text{Change in Disapproval in Year (t - 2)}$
--

The relationship between youth attitudes and cocaine use, however, is different from that of marijuana in two important ways. First of all, the only significant relationship occurs when there is no time-lag between disapproval, perceived harm, and actual youth use rates. Second, this relationship, while statistically significant even above the 99% confidence level, is not nearly as strong as the one witnessed between marijuana disapproval and use.

**Regression Analysis on Disapproval and Youth Past-Month Use Rates
(Cocaine)**

	Coefficient	Std Error	P-Value
Intercept Term	52.967	12.545	3.821 E -4
Change in Disapproval	-0.524	0.133	7.393 E -4

**Regression Analysis on Perceived Harm and Youth Past-Month Use Rates
(Cocaine)**

	Coefficient	Std Error	P-Value
Intercept Term	12.545	3.086	5.554 E -4
Change in Perceived Harm	-0.112	0.038	7.556 E -3

The following equation summarized these relationships between youth attitudes on cocaine use and actual 12th grade use levels:

<p>Change in Cocaine Use Rate in Year (t) = -0.52 * Change in Youth Disapproval in Year (t)</p> <p style="text-align: center;">or</p> <p>Change in Cocaine Use Rate in Year (t) = -0.11 * Change in Perceived Harm in Year (t)</p>

APPENDIX C

STATISTICAL REGRESSION ON YOUTH ATTITUDES, INITIATION, AND USE RATES

By running a time-series regression on the number of initiates and past-month marijuana use for 12th graders, we find that the strongest relationship between the change in initiates and change in drug use rates occurs when we regress initiation on drug use rates *two years later*. The chart below summarizes this regression:

Regression Analysis on Marijuana Initiation and Youth Past-Month Marijuana Use

	Coefficient	Std Error	P-Value
Intercept Term	-6.565	2.577	1.823 E -2
Change in Initiates (100,000s)	.0143	0.00118	2.087 E -10

Each decrease in 100,000 marijuana initiates will produce a decrease in marijuana use by 1.43 percentage points *two years later*

We can also examine the relationship between 12th grade “occasional use” disapproval and marijuana initiation. Since there is a two-year time lag between use levels and both youth disapproval and the number of initiates, we would expect a strong correlation between disapproval rates and initiation rates *in the same year*. As the regression results below indicate, this is exactly what we find:

Regression Analysis on Youth Disapproval and Marijuana Initiation (100,000s)

	Coefficient	Std Error	P-Value
Intercept Term	43.310	3.084	1.750 E -11
Change in Disapproval Rate	0.348	0.047	6.620 E -7

Each increase in 1% of youths who disapprove of occasional marijuana use produces a decrease of 34,800 marijuana initiates *in that same year*

When we examine these same factors with the drug cocaine, however, we arrive at slightly different results. First of all, the strongest correlation between cocaine initiates and youth cocaine use does not occur with a two-year lag time but rather in the same year. Although

we might expect cocaine and marijuana initiation to have the same effect on their respective use levels, there could be two plausible reasons for this discrepancy. One reason might be that cocaine demonstrates a much shorter “addiction” period. That is, while those who experiment with marijuana generally do not start using it regularly for two years, first time users of cocaine develop regular use patterns in the same year of their initiation. Another reason could be that since most cocaine users do not begin using the drug until after high school (as demonstrated by the average age of initiates in Appendix A), youth use rates are unlikely to be as strongly connected to the total number of initiates for cocaine as for marijuana. Nevertheless, we do see a statistically-significant relationship between the number of cocaine initiates and youth use rates in the same year:

Regression Analysis on Cocaine Initiation and Youth Past-Month Cocaine Use			
	Coefficient	Std Error	P-Value
Intercept Term	-1.673	0.540	5.922 E -3
Change in Initiates (100,000s)	0.00569	0.055	3.572 E -9

Each decrease in 100,000 cocaine initiates will produce a decrease in cocaine use by 0.57 percentage points in that same year

Cocaine also differs from marijuana in that there is no clear causal relationship between youth rates of disapproval of “occasional” cocaine use and the number of cocaine initiates. This should not be surprising given the relatively unclear link between cocaine disapproval and actual use levels. The only significant regression results for cocaine disapproval and cocaine initiation over any time interval are actually counter-intuitive – they generate a relationship which implies that as youth disapproval increases, cocaine initiation actually increases as well. Therefore, this relationship should be ignored.

APPENDIX D

STATISTICAL ANALYSIS OF DRUG PRICES AND MEASURES OF USE

A fairly strong relationship exists between youths' perceived availability of marijuana and youth use rates, as the following table shows. However, it should be noted that since the number of youths who perceive marijuana as easily-available has not deviated far from 85% over the past decade, this relationship is valid only over a very narrow band.

Regression Analysis of Youths' Perceived Availability and Price on Past-Month Use Changes in Past-Month Marijuana Use Due to Each

	Coefficient	Std Error	P-Value
Change Explained by Perceived Availability	2.571	0.468	1.884 E -5
Change Explained by Street Price	-1.364	0.196	6.485 E -6

- Each *increase* of 1% in the percentage of youths who view marijuana as "fairly easy to obtain" produces an *increase* in marijuana use by 2.6 percentage points
- Each \$1/gram *increase* in street price produces a *decrease* in marijuana use by 1.4 percentage points

Given that both perceived availability and actual drug prices seem to influence youth use in the same way, it is not surprising that street price is tied to youth perceptions of marijuana's availability, although only at the 98% confidence level:

Regression Analysis of Street Price on Youths' Perceived Availability of Marijuana

	Coefficient	Std Error	P-Value
Intercept	91.102	1.240	1.625 E -19
Change Explained by Street Price	-0.339	0.120	1.342 E -2

Each \$1/gram *increase* in the street price of marijuana produces a 0.34% *decrease* in the rate of youths who perceive marijuana to be easily obtainable

The effect of perceived availability and street price on the number of marijuana initiates, however, is not as strong. In fact, the regression using street price is significant only at the 60%

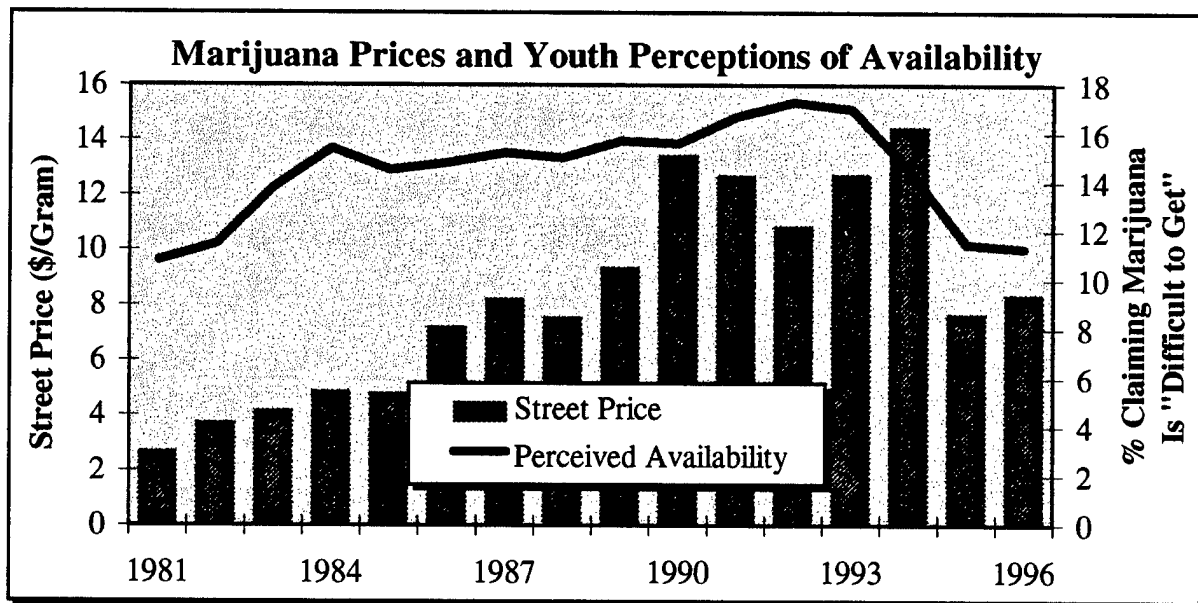
level, although a regression on youth perceptions of availability and marijuana initiates produces the following results significant at the 97.5% confidence level:

Regression Analysis of Youths' Perceived Availability of Marijuana on Marijuana Initiates

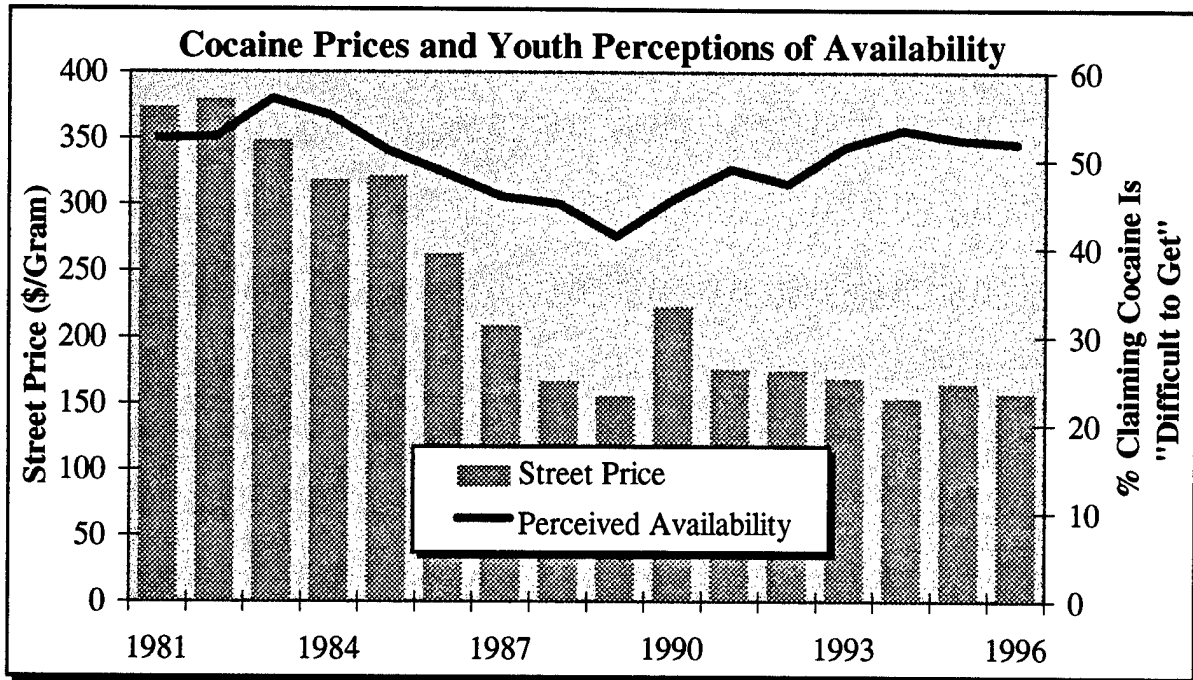
	Coefficient	Std Error	P-Value
Intercept	-6193.1	3059.2	6.398 E -2
Change Explained by Youth Perceptions	94.371	35.822	2.061 E -2

While it does not appear to warrant much confidence, this regression suggests that each 1% decrease in the rate of youths who view marijuana as "easy to obtain" leads to a 94,400 reduction in the number of marijuana initiates for that year.

The relationship between cocaine availability (as measured by either youth perceptions or actual street prices) and use rates is far more nebulous than that for marijuana. In fact, there is no meaningful relationship between cocaine availability and either cocaine use *or* cocaine initiation that is significant above the 80% confidence level. One of the reasons for this might be the disparity between actual cocaine street prices and youths' perception of cocaine's availability. This is clear when we compare marijuana prices and perceived availability to that of cocaine:



Data Source: 1997 Monitoring the Future Study / STRIDE Data (1981-1996)



Data Source: 1997 Monitoring the Future Study / STRIDE Data (1981-1996)

The lack of strong correlation between youth attitudes of availability and cocaine street prices indicates that price is not the only factor influencing perceptions of availability. Other factors, such as the risk involved in attempting to purchase cocaine, also may play a role in determining the drug's availability. Therefore, supply-control strategies which do little to increase drug prices can still be effective in impacting availability through "reverse-sting" type operations which target drug purchasers rather than sellers in order to disrupt drug markets.

APPENDIX E

STATISTICAL REGRESSION ON DRUG PRICES AND DRUG-USE CONSEQUENCES

Regression analysis shows that there is a very significant relationship between cocaine street prices and emergency-room cocaine episodes (as measured by the Drug Abuse Warning Network). We can be over 99.9% confident that this connection between an increase in price and a decrease in use-related consequences exists.

Regression Analysis on Cocaine Price and Cocaine-Induced Emergency Room Episodes

	Coefficient	Std Error	P-Value
Intercept Term	203628.36	11030.94	3.178 E-11
Change in Cocaine Street Price	-721.25	60.813	1.087 E-8

For every \$1/gram *increase* in cocaine street price, there are 721 *fewer* emergency room drug episodes for which cocaine is primarily responsible.

There is also a strong connection (although not as significant) between heroin street prices and emergency-room heroin episodes. This regression is summarized in the table below:

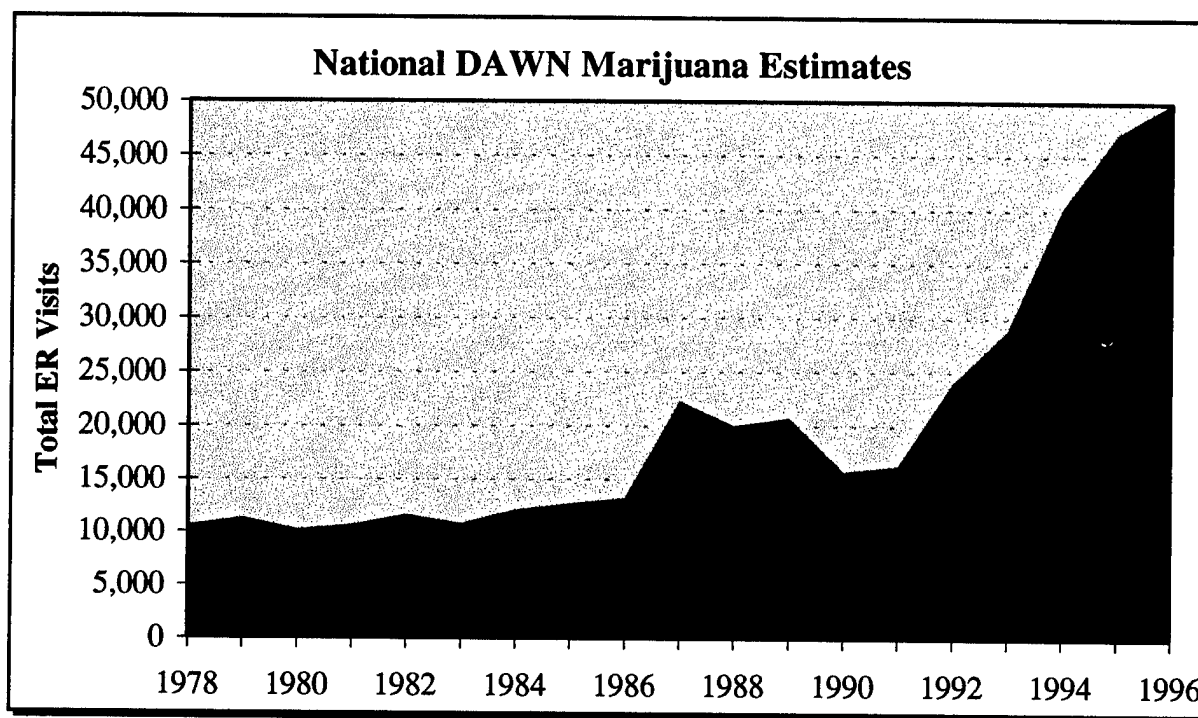
Regression Analysis on Heroin Price and Heroin-Induced Emergency Room Episodes

	Coefficient	Std Error	P-Value
Intercept Term	76451.07	6728.24	1.878 E-8
Change in Heroin Street Price	-16.518	2.876	5.089 E-5

For every \$1/gram *increase* in heroin street price, there are 17 *fewer* emergency room drug episodes for which heroin is primarily responsible.

When we attempt this regression for marijuana price and marijuana-induced consequences, however, we cannot achieve any plausible relationship. Therefore, marijuana price does not appear to be a major factor in determining the number of emergency-room episodes for which marijuana is responsible. Unfortunately, there does not seem to be any strong connection between marijuana consequences and any measure of marijuana use or availability. Regressions using youth use rates, initiation numbers, and youth attitudes are no more revealing.

In fact, none of the data in this report adequately explains the sudden and massive increase in the number of marijuana-induced medical consequences over the past five years.



Data Source: "Historical Estimates from DAWN," SAMHSA

Although these consequences are not as severe or concentrated as those exhibited by cocaine or heroin, they certainly warrant further exploration into their possible causes.

APPENDIX F

ALTERNATIVE COMMUNITY DRUG ENFORCEMENT STRATEGIES

Together, open-air drug market enforcement and coerced abstinence programs address drug use and its consequences as well as the social ills associated with illegal drug markets. They are perfect compliments in the fact that they both directly address different user populations while simultaneously, though indirectly, diminish the capacity for illegal drug markets to operate at anywhere near their current magnitude. More importantly, these programs focus on the real objective at hand. Interdicting illegal drug shipments or increasing the participants in treatment programs may be worthy goals, but they fail to focus on the objective of *getting users to stop using*. After all, if there was no drug use, there would be no drug use problem. Furthermore, both programs are highly feasible for ordinary communities to implement provided that their proponents are able to overcome the public policy barriers associated with any innovative program that both contradicts normal paradigms about a social ill and present front-loaded costs in exchange for long-term benefits.

ELIMINATING OPEN-AIR DRUG MARKETS

Although drug street-prices are likely positively-correlated with the amount of drug use, the demand for illegal drugs is a function of more than just the drug's cash price. As Mark Moore and Mark Kleiman have both concluded, "effective price" – a measure that includes monetary price along with access time and risk of consequences for purchasing the drugs – is a more meaningful factor for determining demand.¹ If this is true, then a shift away from the

¹ David Boyum and Mark A. R. Kleiman. "Alcohol and Other Drugs" in *Crime*, James Q. Wilson and Joan Petersilia, eds. San Francisco: ICS Press, 1995. 315.

traditional approach of seizing drugs and arresting dealers and towards a comprehensive strategy that addresses both the supply *and* demand aspects of the drug market would make a lot of sense.

One of the principal problems in shutting down drug markets is that one-at-a-time prosecution of street-level drug dealers is an inefficient manner of attacking the illegal drug supply – especially with cocaine or crack and heroin. Those who actually serve time, a scenario that is by no means guaranteed even with mandatory minimums given the lack of sanctioning resources, are simply replaced on the street by someone else willing to risk improbable prosecution for the opportunity to be a “player” in the business. Thus, for many communities, particularly those in which well-established open-air drug markets tend to flourish, the deterrent effect for dealing is minimal. The failure of traditional enforcement methods to shut down drug markets, however, does not mean that doing so is an impossible charge. But it does require a shift of emphasis from individual dealers to the nature of the market itself.

The first step towards closing down the drug market is understanding the manner in which the drug market operates. As Weisburd and Green discovered when examining drug hot spots in Jersey City, drug markets vary widely in type of drug activity, physical characteristics, and location.² In Tampa, Jersey City, Norfolk, and Houston, four cities who have implemented community policing strategies that have successfully reduced crime associated with illegal drug markets, these “hot spots” accounted for a disproportionately-high amount of the cities’ crime, especially in the area of disorder.³ More significantly, knowledge concerning the characteristics

² David Weisburd and Lorraine Green. “Policing Drug Hot Spots: The Jersey City Drug Market Analysis Experiment.” *Justice Quarterly*, December, 1995. 715.

³ In Jersey City, hot spots constituted a little over 4% of the total street area of the city but made up over 15% of violent crimes and over 40% of “public morals offenses.” (Weisburd and Green, 716.) No statistical figures are available for the other locations, although qualitative evidence suggests nearly the same type of ratios for drug hot spots in those cities.

of these hot spots can generally be determined quite easily, either by empirical analysis consisting of tracking calls for service and arrest locations or by qualitative evidence gathered by authorities or citizens within those communities. Thus, finding out as much information about existing drug markets is a critical step for communities to take. Many times this is simply a matter of sharing information within the criminal justice system itself – probation, local police, and prosecution are too often left to their independent domains despite that fact that together, they can often provide enough information to accurately depict the nature and location of drug markets within communities.

Once the nature and location of the markets themselves is understood, the next step involves deciding how to control them (or, better yet, close them altogether).⁴ Naturally, different tactics are better suited for some hot spots more than others, but one of the most important keys to intervention seems to be an emphasis on attacking the economic structure of the drug market itself. Like any other marketplace, the drug trade cannot survive unless it is fueled by a constant stream of *willing buyers*. Regardless of the nature or location of markets, then, controlling the drug trade always relies upon the same two questions:

- (1) Can the purchase of illegal drugs be made sufficiently costly and inconvenient to buyers and risky to sellers to disrupt the long-term operation of such markets?
- (2) Can this be done within the narrow resource constraints of the local criminal justice system?

⁴ Of course, it is critical to keep in mind that markets with different characteristics will almost always call for different modes of intervention. Tactics that work well in a gang-controlled, territorial, well-organized market such as that in Chicago will be much different than a successful intervention in a market best described as a free-for-all in a highly-localized area such as Link Valley in Houston. This appendix merely posits that strategies which target the economics of the drug market rather than dealers themselves tend to be much more successful in long-term disruption of a community's drug trade.

Unfortunately, the constraints involved in the latter question is often the limiting factor, and in the case of drug trade that occurs behind closed doors, the answer to this question is more than likely “no.” Without a more substantial federal effort towards both reducing the chronic user population (those individuals who likely purchase over four-fifths of the drugs in the market) and preventing drugs from reaching communities in the first place, underground illegal drug markets will continue to flourish. However, this does not mean that drug enforcement is hopeless. As the Link Valley operation in Houston, Tampa’s Quick Uniformed Attack on Drugs (QUAD), and Norfolk’s Police Assisted Community Enforcement (PACE) programs demonstrate, there are substantial crime-reduction benefits for focusing on and eliminating the open-air drug trade in communities.

Open-air drug markets thrive on an anonymity not unlike that associated with mobility. In any given trade in such an atmosphere, the buyer and dealer alike perceive a substantially-reduced risk of apprehension if the transaction can be made quickly (often times from a vehicle), with the appearance of routine, and in the presence of dozens of other transactions taking place in close proximity. Although the majority of the buyers in such a market are often casual users from outside the community who arguably pose little criminal or health risks to society, shutting down these markets by focusing on trades between dealers and these types of users can still serve three meaningful objectives:

First, increasing the risk of apprehension or even just the inconvenience involved in purchasing drugs is often enough to deter casual users from frequenting open-air markets. In Link Valley, for example, focusing on demand-reduction by targeting drug *buyers* in the community’s drive-by open air market almost completely shut down the outdoor drug trade in the area. This occurred because casual users driving in from out of town made up the majority of the

number of sales (although probably not in terms of total quantity purchased) and without them, there was neither the number of buyers nor the associated anonymity necessary to sustain the market.

Second, even market-closing programs designed solely to bring the streets back under control often have the effect of reducing market-associated crime as well. In Tampa, the crime rate fell by nearly 10 percent after the introduction of QUAD despite the fact that Florida's average crime rate increased by over 3 percent over the same one-year period, and drug-related violent crimes were cut in half.⁵ In Jersey City, there was no change in violent crimes around the hot spot areas after intervention, but there was a significant decrease in the amount of disorder reported.⁶

Third, contrary to the myth that intensive, localized interventions merely displace drug markets to adjacent, unpatrolled venues, displacement is often negligible and almost never total. In Jersey City, for example, some new drug markets appeared after the intervention to shut down new hot spots (although not at a one-for-one ratio), but some hot spots in which no intervention took place simultaneously showed signs of improvement – an effect described as “diffusion of benefits.”⁷ The results of the Link Valley intervention, a buyer-targeted approach in an isolated but easily-accessible neighborhood, support this phenomenon, as no new drug markets opened in the proximity of the intervention.

⁵ David Kennedy. “Closing the Market: Controlling the Drug Trade in Tampa, Florida.” Produced by the National Institute of Justice, April, 1993.

⁶ Weisburd and Green, 724.

⁷ Weisburd and Green, 727-728. Weisburd and Green concluded from this evidence that there was no evidence that suggested more hot spots were created from intervention than would have developed naturally. Therefore, the effect of “displacement” is often given too much merit.

What kind of conclusions can we draw from this evidence? First of all, as one would expect, open-air drug markets tend to be much more violent and disorder-causing than those that occur behind closed doors. Open-air markets are more apt to cause turf disputes between rival dealers or gangs; meanwhile, disorder and crime increase the more disorder that is present – and it certainly is if drugs are being sold en masse on the street. Second, the aforementioned interventions strongly suggest that open-air drug markets are highly location-specific. That is, an open-air drug market cannot simply emerge anywhere; it requires specific prerequisites, namely easy access by motor vehicles – particularly those coming from outside the community, many entrance and exit routes for dealers, and minimum obtrusiveness from authorities or citizen groups.

Certainly, different circumstances surrounding these open-air drug markets will call for different types of specific interventions. Nevertheless, there are several key characteristics that must be present for any such strategy to be effective:

First, no intervention can be successful at disrupting the drug market without significant support from the community – including agencies outside of the criminal justice system. Inhabitants of the communities themselves are perhaps the most important role players in any intervention. They are the only norm-generating group that have the unique ability of observing neighborhood activities twenty-four hours a day, and they are also in the position to hamper any intervention that they feel is done incorrectly. In order for citizen groups to be effective partners, however, they must be made to feel absolutely safe from retribution – this means that authorities must make it clear to citizens and criminals alike that citizens will be protected at all costs. It is also critical to involve the media in market intervention. As the contrasting examples of QUAD (in which the media played a pivotal role in the program's success) and George Kelling's

experiences in stopping New York City vagrancy in subways (in which the media, with guidance from the ACLU, severely hampered disorder-control efforts), media coverage can often make or break an intervention.

Second, despite the common inability to jail dealers for extended periods of time, authorities need to send a strong deterrent message to those involved in the supply end of the drug trade. Studies have shown that deterrence against crime works most effectively when consequences are perceived (and actually imposed) with certainty and swiftness, but not necessarily severity.⁸ Rather than random, isolated, and uncertain prosecution of street-level dealers, enforcement should be done in a premeditated (and pre-announced) intensive sweep after dealers are singled out by sting operations or observation.⁹ This type of operation serves two purposes:

- It sends the message to other dealers that authorities know who they are and will not tolerate their activity. Even though there will be plenty of replacements for incarcerated dealers, the fact that authorities know enough about the drug trade to conduct a large-scale sweep also sends a message to mid-level distributors who might encourage their dealers to move the trade off the streets for risk of either losing too much product or being named for prosecution themselves.

⁸ This concept will be further developed in the following section of the appendix on the benefits of “coerced abstinence” programs.

⁹ It may at first seem paradoxical to telegraph a sweep to dealers, but the deterrent effect of announcing a crackdown and then following through with it can be even more effective and valuable in the long term than an unannounced sweep, as demonstrated by the Boston Cease Fire project.

- It also allows communities a respite (albeit a brief one) from drug-markets for long enough to either help remedy some of the area's disorder problems or organize for a longer-term, market-disrupting intervention.

Third, individual drug transactions must be made as inconvenient and risky to the buyer as possible. While it may be difficult to do this for the well-connected, chronic user, it often times is as simple as blocking non-local traffic from entering drug market areas or posting warnings that the area is under police surveillance due to heavy drug trading.¹⁰ Stiffer penalties for buyers are also possible when the law will allow for it. One component of QUAD, for example, seized the vehicles of potential buyers caught in reverse-sting operations. Whatever the penalty for buying, be it negative publicity, loss of property, or stiff sanctions, deterrence is generally easier than for sellers provided that authorities publicize the consequences that those caught buying drugs have suffered. This is because unlike their seller counterparts, the typical drive-by buyer does not live a life of crime and thus has not been anesthetized to the sanctioning process of the criminal justice system. As officers noticed in QUAD, after several nights of heavy enforcement against buyers in open-air markets, the number of buyers usually drops substantially.¹¹

Thus, focusing on open-air markets – and particularly drive-by drug purchases – is a feasible policy that does not require the average police department to acquire much in the way of additional resources that can make a big impact towards reducing the use and crime consequences associated with the illegal drug trade. But alone it probably is not enough to

¹⁰ These two methods were used with high success in Link Valley and Tampa, respectively.

¹¹ According to QUAD officer M.B. Hopper, "When we first started doing reverses [reverse sting operations], we'd go out and arrest 30 people in a night. Then, all of a sudden, it just dropped off, went down to three, four arrests a night.... People quit buying." In Kennedy, "Closing the Market," p. 9.

seriously dent the amount of drug *consumption*, as opposed to the number of casual users, in a community. Although there is some preliminary evidence that open-air market interventions may be positively-correlated with the amount of chronic users who seek treatment, the majority of chronic users will likely know dealers well enough to not disrupt their purchasing of illegal drugs despite the increased inconvenience. In order to deal with this most dangerous and harmful faction of the drug-using population, then, we must explore community alternatives for reducing the demand for drugs among chronic users.

COERCED ABSTINENCE: ADDRESSING THE CHRONIC-USER POPULATION

Since casual users account for less than a quarter of the total volume of cocaine and heroin consumed in the United States, any counter-drug policy that aims to substantially reduce drug consumption in addition to controlling drug markets must address America's chronic user problem. This is not a new revelation by any means, but past and present efforts that attempt to curtail chronic drug use and its associated criminal and health consequences have ignored almost everything that is currently known about both deterrence and recovery from substance addiction. As this appendix has already pointed out, standard drug policies generally fail to limit chronic users' access to drugs in any meaningful way. More importantly, while those on probation or parole (including an estimated two-thirds to three-fourths of all chronic users at any one time¹²) are required to abstain from drugs and other illegal activity as a condition of their freedom, in practice, even intensive supervision programs with "mandatory" drug rehabilitation fail to administer a sufficient number of random tests to create a strong deterrent effect. As Mark

¹² Mark A.R. Kleiman. "Coerced Abstinence." *The New Paternalism: Supervisory Approaches to Poverty*, Lawrence M. Mead, ed. Washington, DC: Brookings Institution Press, 1997. p. 200.

Kleiman estimates, a big-city chronic user on probation in a typical program with monthly random tests has less than a one in ten chance of testing positive for cocaine or heroin use. This low risk of detection (and the sanctions detection entails) fosters rampant drug use and consequently too many positive detections among probationers for the capacity-limited criminal justice system to apply the threatened sanctions for all those who use.¹³ Consequently, deterrence fails and chronic drug use continues unabated. In order to make a visible dent in the drug consumption of chronic users, communities need a system which can extend the kind of supervisory capacity represented by treatment programs to a greater proportion of the drug-using population for a longer period of time, and this would have to be done by ordinary judges and probation officers within narrow budgetary and capacity constraints.

At first, this may appear to be an impossible dilemma. After all, most law-abiding people recognize that even a one in ten chance of being incarcerated for illegal behavior is a risk not often worth taking; chronic drug users, on the other hand, do not make these same rational comparisons of costs and benefits. As Mark Kleiman states, "The key to fixing the situation is to adapt the penalty structure to the decision-making styles of the people whose behavior one is trying to influence. That means swift and certain, though relatively mild, punishment rather than randomized draconianism."¹⁴ This is the philosophy behind "coerced abstinence" programs (rather than coerced *treatment*) that aim to reduce drug consumption among chronic users rather than focusing on treatment compliance. While many communities have tried and abandoned drug treatment programs before because sentenced offenders failed to stop using drugs even though they showed up for treatment sessions. Coerced abstinence proponents argue that in these

¹³ Kleiman. "Coerced Abstinence." p. 202-203.

¹⁴ Kleiman. "Coerced Abstinence." p. 203.

scenarios, focus was incorrectly placed on attending treatment rather than staying of drugs. Furthermore, diversion programs are generally only voluntary in nature and do not apply to those whose crimes have been particularly severe. Thus, treatment programs often do not include many of the most troublesome chronic users/offenders whose drug consumption it would be most valuable to influence. For example, in New York City's Drug Treatment Alternative to Prison (DTAP) program, only about two-thirds of eligible defendants chose to participate in the program, and only 20 percent of these individuals successfully completed treatment without recidivism – effectively eliminating drug use in only 13 percent of the total eligible population, which does not even include “serious” offenders.¹⁵

The two elements that distinguish coerced abstinence from other “controversial” programs that aim to prevent chronic drug use and its consequences is that:

- (1) coerced abstinence does not require communities to develop any specialized treatment techniques or otherwise change their existing criminal justice system structure, and
- (2) coerced abstinence applies to *all* offenders identified as drug users.

It works because most of the components necessary to successfully operate the program, with the possible exception of quick-turnaround drug testing capability, are already in place, including the most important element: the drug offenders themselves, three-quarters of whom are already under criminal justice system supervision.

¹⁵ David C. Anderson. *Sensible Justice: Alternatives to Prison*. New York: The New Press, 1998. p. 84-85.

A generic coerced abstinence system would operate in the following way¹⁶:

- Using drug test screens and past records of all probationers and parolees currently under criminal justice system supervision, communities should identify those who are drug users.
- Users are subjected to twice-weekly drug tests that can be at any time of the user's choosing provided there is a separation of 72 hours between each test, leaving no window for undetected use.
- Every positive test earns the offender a fixed two day period of incarceration effective immediately and without modification.¹⁷
- After a six month period of consecutive negative tests, offenders are eligible for less frequent or random testing

Clearly, the proposed program is a simple one. The question is, can it be an effective one as well? Unfortunately, the implementation of this idea is so new (and rare) that empirical results are not available in sufficient quantity to make any judgments about the system's productivity in reducing chronic drug use. Similar programs, such as Breaking the Cycle in Birmingham, Alabama, the Coos County, Oregon, project, and Project Sentry in Lansing, Michigan all report promising preliminary results. In Coos County, for example, over 70 percent

¹⁶ The following steps are summarized from a program structure suggested by Mark Kleiman in "Coerced Abstinence." p. 205-206. Kleiman remains one of the only individuals who has explored feasible coerced abstinence programs; therefore, the majority of the material cited in this section of the appendix tends to come from his research.

¹⁷ Exceptions could sparingly be made for gainfully-employed offenders to postpone their sentence until the weekend to avoid perpetuating the viscous circle of unemployment and crime. Individual communities would be responsible for making this determination.

of the selected probationers stay clean after their third positive test and its associated stay in prison.¹⁸ Of course, these are all relatively small jurisdictions. The true test will come when coerced abstinence is applied in an area with wide-spread chronic user problems, such as the proposed state-wide program in Maryland.

Even though success rates for these programs may not yet be available, there do appear to be several challenges that must be addressed for a coerced abstinence program to be successful. First, communities must have the capacity to both conduct a large number of drug tests and give probationers immediate results from those tests – a capability present in most, but not all, communities with large numbers of chronic users, as well as the capacity to rush those who test positive to incarceration – again, an element that is usually available on a short-term basis in local jails. Second, a community must have the probation officers (estimated at one per 50 cases) to run the program and police officers (one per 250 cases) to chase absconders. Finally, a community must have the capacity to treat offenders who desire slots in treatment programs. Overall, Kleiman estimates that well-run coerced abstinence program would cost approximately \$3,600 per offender per year – about twice the cost of normal probation but only one-eighth that of maintaining an offender in prison for a year.¹⁹

In addition to shrinking the chronic user population and reducing both the criminal and health consequences of drug use, coerced abstinence programs offer some very appealing diffusion benefits. First, keeping 60 percent of the chronic user population off drugs at any one time would reduce drug dealers' revenues by 40 percent, significantly diminishing drug markets and their side effects on neighborhoods. Next, by practicing real deterrence, coerced abstinence

¹⁸ Gady A. Epstein. "Stay Clean, or Stay in Jail." Baltimore Sun, 25 April 1998. p. A1+.

¹⁹ Kleiman. "Coerced Abstinence." p. 211.

programs also have the potential to significantly reduce prison populations – especially if estimates that 10 percent of the drug offenders in prison are serving time for non-dealing offenses. Third, and perhaps most importantly (although too-often ignored), reduced chronic drug use means improved social functioning – a more productive economy, better neighborhoods, and more healthy families.

Many of the specific elements in a coerced abstinence program should be left up for individual communities to decide; there is no one structure that can work equally well anywhere in the nation. Nor is resistance not to be expected. Coerced abstinence is largely unappealing to two advocate groups: those who view addiction as pathological and that the only solution is the “get tough” draconian scenario, and those treatment advocates who view coerced abstinence as one more competitor for already-scarce funds. The first of these fears is almost certainly unfounded. Those who view coerced abstinence as “soft on crime” or incapable of influencing the behavior of addicts have missed the point of deterrence entirely. Even if addiction is a disease, there is no empirical evidence suggesting that even addiction implies an inelastic demand function – experiments have shown it to be both sensitive to price (in terms of effort) and consequences.²⁰ The second fear, that sanctions are an imperfect substitution for treatment, may be justified, at least morally. But given the fact that two decades of treatment programs have been unable to dent the chronic user population, coerced abstinence should at least be considered a viable and feasible compliment to treatment.

Finally, many people will oppose coerced abstinence based on its front-loaded costs and delayed, long-term benefits. America is an instant-gratification society, and our choices of public

²⁰ Kleiman. “Coerced Abstinence.” p. 212. Citing Philip Heyman’s article, “Resolving the Contradictions of Addiction.”

policies certainly reflect that. As Mark Kleiman notes, "It is rare a county executive who is eager to spend the [taxpayers'] resources on testing and sanctions in order to save the [state] money in the form of reduced prison spending."²¹ Making an impact on the chronic user population requires either a great deal of courage or a great deal of desperation. If no one acts on the former in the near future, however, soon everyone will be required to act on the latter.

²¹ Kleiman. "Coerced Abstinence." p. 214.

APPENDIX G

PRIMARY DATA SOURCES

SAMHSA National Household Survey on Drug Abuse

NHSDA is a random survey of U.S. households (those citizens who own property) conducted annually by the Department of Health and Human Services. It measures drug-specific use rates of demographics of the population by age, race, gender, education, employment, and population density, as well as examining initiation rates. NHSDA is probably the best available source of overall general-population drug use statistics. Its primary downfall is that its survey method fails to account for drug use among incarcerated, institutionalized, or vagrant individuals - populations where drug use rates tend to be well above the national norm.

Annual Number of Initiates (1000s) and Average Age of Initiation

<u>Year</u>	<u>Marijuana Initiates</u>	<u>Marijuana Initiate Age</u>	<u>Cocaine Initiates</u>	<u>Cocaine Initiate Age</u>
1968	1537	19.3	314	18.7
1969	2361	19.4	294	17.9
1970	2796	19.1	536	18.7
1971	2867	18.7	614	20.2
1972	2845	18.3	810	19.0
1973	2843	17.9	671	20.5
1974	2875	18.5	1079	21.3
1975	3001	18.5	1048	21.2
1976	2818	18.8	1089	21.0
1977	2808	19.1	1292	21.6
1978	2912	18.0	1243	21.4
1979	2553	17.5	1317	21.6
1980	2600	18.7	1154	21.0
1981	2066	17.5	1357	21.5
1982	2065	17.7	1157	21.6
1983	2066	17.6	1268	21.8
1984	1962	19.7	1030	22.1
1985	1827	17.5	762	22.5
1986	1884	20.1	821	22.8
1987	1817	17.6	666	22.3
1988	1560	17.3	485	21.3
1989	1370	17.5	450	22.1
1990	1446	17.3	552	22.6
1991	1432	17.1	531	21.3
1992	1715	17.8	652	20.2
1993	1987	16.9	803	20.2
1994	2400	16.7	1045	20.1
1995	2368	16.7	1025	19.1

Percentage of Drug Users in General Population
All Ages 12 and Older

<u>Year</u>	<u>Marijuana</u>	<u>Cocaine</u>	<u>Heroin</u>	<u>Other Drugs</u>
1979	13.2	2.6	0.1	N/A
1982	11.5	2.4	0.1	N/A
1985	9.7	3	0.1	N/A
1988	6.2	1.6	0.1	N/A
1990	5.4	0.9	0.1	0.3
1991	5.1	1	0.1	0.4
1992	4.7	0.7	0.1	0.3
1993	4.6	0.7	0.1	0.5
1994	4.8	0.7	0.1	0.4
1995	4.7	0.7	0.1	0.6
1996	4.7	0.8	0.1	0.5

Monitoring the Future Study

MTF, conducted by the University of Michigan, is the primary source of information concerning drug use and attitudes among the nation's middle and high school students. It offers a very comprehensive examination of drug-specific use rates among 8th, 10th, and 12th grade students. It also measures students' attitudes towards illegal drugs use. MTF's primary shortcoming is the fact that it does not account for youth who have dropped out of school, and thus may undercount the actual number of illegal drug users.

Marijuana Use and Attitudes among Youth
12th Grade Attitudes on "Occasional" Use

<u>Year</u>	<u>Past-Month Use</u>	<u>Disapproval of Using</u>	<u>Perceived Harm</u>	<u>Perceived Availability</u>
1975	27.1	54.8	18.1	87.8
1976	32.2	47.8	15.0	87.4
1977	35.4	44.3	13.4	87.9
1978	37.1	43.5	12.5	87.8
1979	36.5	45.3	13.5	90.1
1980	33.7	49.7	14.7	89.0
1981	31.6	52.6	19.1	89.2
1982	28.5	59.1	18.3	88.5
1983	27.0	60.7	20.6	86.2
1984	25.2	63.5	22.6	84.6
1985	25.7	65.8	24.5	85.5
1986	23.4	69.0	25.0	85.2
1987	21.0	71.6	30.4	84.8

<u>Year</u>	<u>Past-Month Use</u>	<u>Disapproval of Use</u>	<u>Perceived Harm</u>	<u>Perceived Availability</u>
1988	18.0	74.0	31.7	85.0
1989	16.7	77.2	36.5	84.3
1990	14.0	80.5	36.9	84.4
1991	13.8	79.4	40.6	83.3
1992	11.9	79.7	39.6	82.7
1993	15.5	75.5	35.6	83.0
1994	19.0	69.9	30.1	85.5
1995	21.2	66.7	25.6	88.5
1996	21.9	62.9	25.9	88.7
1997	23.7	62.2	24.7	89.6

Cocaine Use and Attitudes among Youth
12th Grade Attitudes on "Regular" Use

<u>Year</u>	<u>Past-Month Use</u>	<u>Disapproval of Use</u>	<u>Perceived Harmfulness</u>	<u>Perceived Availability</u>
1975	1.9	93.3	73.1	37.0
1976	2.0	93.9	72.3	34.0
1977	2.9	92.1	68.2	33.0
1978	3.9	91.9	68.2	37.8
1979	5.7	90.8	69.5	45.5
1980	5.2	91.1	69.2	47.9
1981	5.8	90.7	71.2	47.5
1982	5.0	91.5	73.0	47.4
1983	4.9	93.2	74.3	43.1
1984	5.8	94.5	78.8	45.0
1985	6.7	93.8	79.0	48.9
1986	6.2	94.3	82.2	51.5
1987	4.3	96.7	88.5	54.2
1988	3.4	96.2	89.2	55.0
1989	2.8	96.4	90.2	58.7
1990	1.9	96.7	91.1	54.5
1991	1.4	97.3	90.4	51.0
1992	1.3	96.9	90.2	52.7
1993	1.3	97.5	90.1	48.5
1994	1.5	96.6	89.3	46.6
1995	1.8	96.1	87.9	47.7
1996	2.0	95.6	88.3	48.1
1997	2.3	96	87.1	48.5

Drug Abuse Warning Network

DAWN is a data bank kept by the Substance Abuse and Mental Health Services Administration (SAMHSA) under the Department of Health and Human Services. DAWN estimates the number of annual national drug-induced emergency room visits by compiling data from 770 hospitals in America's 21-largest metropolitan districts. Both city-level and national information is kept on emergency room episodes and deaths by drug type, age, race, sex, and method of administration.

Annual Number of National Emergency Room Drug Episodes

<u>Year</u>	<u>Marijuana Episodes</u>	<u>Cocaine Episodes</u>	<u>Heroin Episodes</u>
1978	10581	3438	11666
1979	11284	5347	11900
1980	10218	7712	14707
1981	10644	9750	17112
1982	11584	12370	22965
1983	10765	15188	25100
1984	12062	24368	26449
1985	12651	28827	28877
1986	13171	51666	28862
1987	22276	91739	32696
1988	19962	101578	38063
1989	20703	110013	41656
1990	15706	80355	33884
1991	16251	101189	35898
1992	23997	119843	48003
1993	28873	123423	63232
1994	40183	142878	64013
1995	47000	142500	72200
1996	50000	144200	70500

Number of Annual Cocaine Episodes by Method of Administration

<u>Year</u>	<u>Sniff/Snort</u>	<u>Smoke</u>	<u>Unknown</u>
1978	1347	74	690
1979	1931	113	1100
1980	3144	101	1141
1981	3895	88	1644
1982	5717	172	1631
1983	5862	361	2882
1984	7767	1355	5290
1985	9238	2264	6470

<u>Year</u>	<u>Sniff/Snort</u>	<u>Smoke</u>	<u>Unknown</u>
1986	13085	8717	14864
1987	15174	23535	29535
1988	14119	27629	37482
1989	14082	30474	43785
1990	9643	22660	30776
1991	12750	33392	34505
1992	13542	44342	40986
1993	13330	40853	51344
1994	14902	48794	60284

System To Retrieve Information from Drug Evidence (STRIDE) Data

STRIDE contains test results (amount and purity) for drug purchases made by undercover DEA agents and other federal and state agents. Using this data, Abt Associates Inc. has averaged this data and converted all the prices to 1997 dollars for pure unit of the drug (purity is not considered in the price for marijuana). The prices listed below are for "standard" retail purchase amounts.

National Average Street Prices
Prices in \$/Pure Gram

Year	Heroin (1 g)	Cocaine (1 oz Bag)	Marijuana (1 oz Bag)
1981	3474.70	283.15	2.71
1982	3367.16	295.40	3.67
1983	3422.96	257.36	4.20
1984	2927.12	223.03	4.88
1985	2585.75	225.53	4.82
1986	2667.88	175.87	7.23
1987	1984.10	135.50	8.24
1988	1806.46	118.86	7.58
1989	1471.09	119.62	9.37
1990	1855.12	177.79	13.45
1991	1940.83	131.13	12.71
1992	1840.05	122.08	10.88
1993	1466.18	123.07	12.75
1994	1286.24	104.74	14.47
1995	1272.82	113.42	7.59
1996	1022.36	108.43	8.39
1997	984.18	98.91	5.24